

Nº 73 November/December 2003

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STEAM IN THE GARDEN

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FRONT COVER:

Aster JNR C62/2, subject of a review in this issue, in a classic rods down pose. The location is on Jim Pitts' elevated track in a beautiful wooded setting in South Carolina.

photo by Ross Schlabach

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Phone, fax, e-mail or write for mailing information on items for review.

Questions or comments? Phone us (Mon. - Thurs. - before 8:00 p.m. Eastern time, please) at 607-642-8119 • 24-hr FAX 253-323-2125 • e-mail address: docsteam@steaminthegarden.com

Check out *Steam in the Garden Online*, located at: <<http://www.steamup.com>>.



CALENDAR OF EVENTS

January 16-18, 2004 - International Small-Scale Steamup, Diamondhead, Mississippi, USA. Don't miss this one...it's the biggest miniature steam railroad convention in the world! Three elevated tracks to accommodate gauge 1, gauge 0 and HO steamers • Clinics • Round the clock steaming • Dealer room • Steamboats and more. Attendees from around the globe. Make your reservations now so you don't miss out. Contact Jerry Reshew, 5411 Diamondhead Drive East, Diamondhead, MS 39525. Phone (228) 255-1747, e-mail: <jreshew@mindspring.com>

February 14, 15 & 16, 2004 - President's Day Weekend - Pennsylvania Garden Railway Society and the Pennsylvania Live Steamers 7th Annual Winter Meet to be held at the Electric City Trolley Station and Museum on the Steamtown National Historic Site Grounds in Downtown Scranton, PA. Hours are from 9am to 5pm. Gauge 1 and Gauge 0 Live Steam Tracks. For more info email Clem O'Jevich at wrunloco@aol.com or phone 570-735-5570. Or contact Harry Quirk, PO Box 215, Springtown, PA 18081 - 610-346-8073.

February 21-22, 2004 - The Houston Area Live Steamers annual Chugga-Chugga Chili Feast and invitational meet. Plenty of day and night running over our 5000+ ft. of mainline 7.5" track as well as our 1500 ft. 4.75" mainline loop. We have also just completed an elevated Gauge 1 loop that is 150 ft. long and is double tracked. We are looking forward to seeing it get some heavy use. As we have traditionally done there will be no formal dinner except that everyone is encouraged to bring a pot of their favorite chili for the Saturday night chili feast. Early arrivals are welcome, camping is allowed in the park and we have plenty of room for any size rig, although there are no hook-ups. For more information about HALS please go to our web site at: WWW.HALS.ORG or call Brent Courtney (281)290-8558.

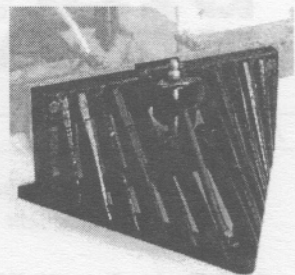
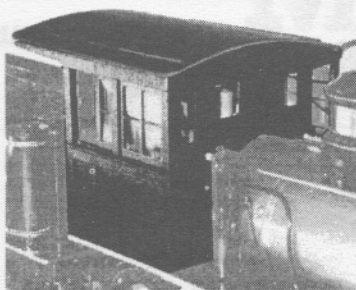
February 23-25, 2004 - Manatee Central RR & Family Lines, Parrish, Florida. 35 miles south of Tampa, 20 minutes south of Sarasota. Privately owned. 9000' of 7.5" gauge track; 1200' of 4.75" gauge track; portable 3.5" gauge track; New Gauge 1 loop in sheltered, wooded area. Pond for boats. Visitors welcome, please call first. Larry & Joan Smith, 9111 Erie Lane, Parrish FL 34219-9049 - (941) 776-2109.

May 7-9, 2004 - 4th Annual Midwest Small Scale Steamup, St. Peters (St. Louis) Missouri. We have two portable tracks for you to enjoy. One track has minimum 10ft radius curves, two tracks (45mm), and storage sidings. The other track is dual gauge, 32mm & 45mm, with a 6' 3" minimum radius. This year there will be available special handling for females accompanying since it is (un)fortunately also Mother's Day weekend. For more information: Web: www.geocities.com/teaton63376/ Email: midweststeamup@sbcglobal.net Phone: Mike Eorgoff 630-830-5885 (Before 9 PM Chicago time) St. Peters (St. Louis) Missouri. Holiday Inn Select, 800-767-3837 or 636-928-1500 for rooms.

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

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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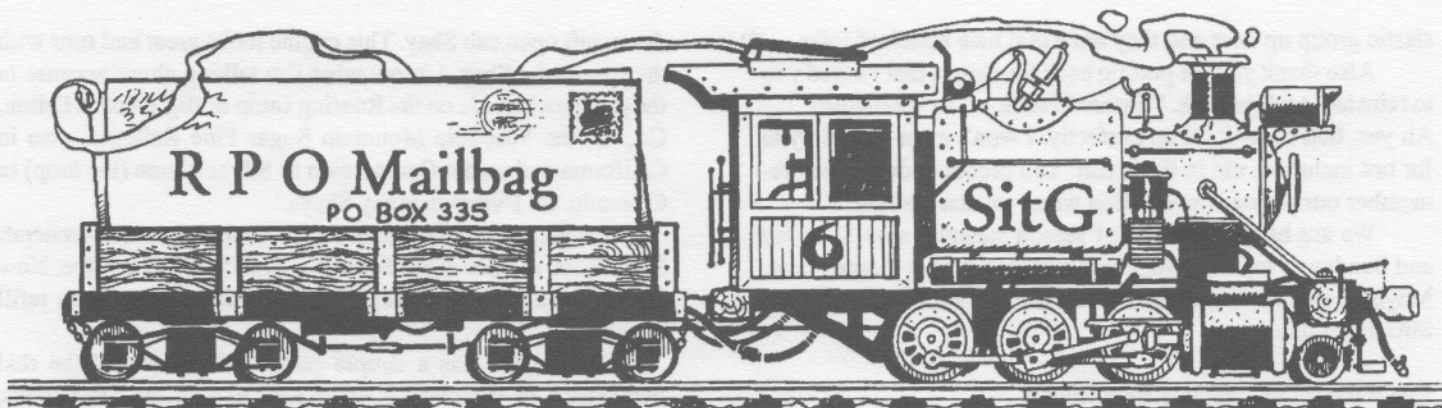


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Pennsylvania
via e-mail

Dear Ron,

Thoughts on the Displacement Lubricator

The displacement lubricator has been used on steam driven models for a hundred years, yet it seems even today not all manufacturers understand how it works and hence how it should be made.

The principle is that the oil will be floated on condensate entering from the steamline, consequently be displaced and forced out of the lubricator and into the steam flow. Given this principle it is clear the oil discharge point should be near the top of the lubricator and that the oil used should not emulsify with the water, despite what may have been written to the contrary.

That doesn't sound like the principle of something which would work satisfactorily and in fact there is one important feature not yet mentioned. That is the air space which should be left when oil is added to the lubricator. A lubricator is often constructed so that it cannot inadvertently be filled completely, but if it isn't then a point should be made of leaving space above the oil.

The consequent air pocket acts as a gas spring and the steam pressure pulsation in the steam pipe due to the action of the cylinders' valves opening and closing causes a pumping action in the lubricator which draws in steam and expels oil.

It is necessary to control the oil delivery rate and this is done by means of a metering orifice or a regulating valve, the orifice being the more usual these days but the valve the more desirable. The amount of restriction necessary for optimum oil delivery will vary depending on the grade of oil used, the temperature in the lubricator, the position of the lubricator, the operating speed and pressure of the engine etc, but a typical orifice for a gauge 1 engine would be of about .035" diameter. In a design where the steam pipe passes through the lubricator the orifice is usually a

'pinhole' drilled in the pipe wall. Whatever its form the outlet for the oil should not be so high in the reservoir as to be in the air pocket.

Whether the lubricator has the steam pipe passing through it, a 'dead leg' connection from the valve chest, or a dedicated live steam supply and a separate oil delivery there is no essential difference in the operation. Nor is the position of the lubricator relative to the cylinders critical, there are examples of almost every conceivable position on the loco being used successfully.

The lubricator should not be in too hot a situation though or the steam may not condense satisfactorily, especially if it is superheated. There have been commercial examples of lubricators installed ahead of the superheater, but this is not good practice as there is a likelihood of oil being carbonised in the superheater.

When a loco is shut down the throttle should be closed and the boiler vented by means of the blower, the whistle or some such atmospheric connection to minimise the chance of oil from the lubricator being drawn back into the boiler.

On many old tinplate steamers with no throttle and a very large air cushion in the lubricator it is almost impossible, certainly impractical, to prevent oil being blown back into the boiler even if the boiler fill plug is removed.

There is therefore ample evidence that running low pressure engines with oil in the boiler, though not to be recommended, is not harmful, even over a period of many years.

If an engine does not have piston valves, use O-rings or have truly superheated steam it probably doesn't need a lubricator. An oiling before the run is all that is required and is more than hundreds of thousands of marine engines got even though they ran continuously for weeks on end.

Murray Wilson

The author submitted this addendum to his letter on this subject that appeared in RPO in the last issue (N° 72). It arrived too late to be included in that issue...ed.

Maine
via e-mail

Ron,

Just got our SitGs in the mail. Great issue, thank you for the article on Maine's steam scene. We have a small but greatly enthu-

siastic group up here and they are a real nice bunch of folks.

Also thank you for putting back the slogan that I asked you to reinstate a while back. "Gather friends, while we inquire....." Ah yes, that sums it all up perfectly. I won't even chastise you for not including me in the credit. You probably don't even remember our phone conversation when we discussed it.

We are having our end of season steamup next Saturday and Sunday to top off a very active season here in Forney land. Maybe I can write a report of the area's overall activities for SitG some day.

Again thanks and regards from Maine,
Don Jackson
East Boothbay Central Supply

* * * * *

The Netherlands

Dear Ron,

It's always a pleasure to take a new train to the garden for her maiden run. Even when it is winter time and properly speaking, when it is too cold to run your engine. But who can wait till summer time? I can't. I was very lucky lately to obtain three more live steamers over the last couple of months. One second hand, one brand new and the last one homemade by myself.

The first one was an older 0-4-2 Baldwin model made by Aster in 1980, and named the Baldwin B1 rear tank. I stumbled over it on a commercial steam day in Arnhem in the eastern part of the Netherlands. The city of Arnhem is well known from the movie *One Bridge Too Far*.

Anyway this engine had never run. So it was not worn out but instead dryness. After replacing most of the gaskets and O-rings (all leaking steam), I remembered that this engine had two specific problems. One was the cylinder block. This is made of aluminum while the cylinder itself is made of copper tube. This copper tube, which is shorter than the cylinder block, can move through the block when it gets hot and shut off the steam ports on one side. And that means no steam and no oil on one side of the piston. Besides, the piston, which is not really a piston but two Teflon cubes with the back to each other, can get damaged by leaving the edge of the copper tube and reentering it. I've put liquid packing between the cylinder and the block and that solved the problem.

The second problem is lightning the wick burners, especially the first burner. By taking away part #9 (the cross tie), the first wick gets much more air to burn. Don't worry about the eccentrics as long as you leave the blower open. The flames are sucked into the fire tube of the boiler and don't touch the eccentrics.

This engine runs so fast that I needed radio control and while there is only room for the servo in the cab, I bought a L.G.B. narrow gauge car #45150. This field railroad baggage car contains the receiver and battery. It has the same color as the engine. They are looking great together.

The second loco I received came from the California & Oregon Coast Railway shop in Rogue River OR. It was the

Accucraft open cab Shay. This engine looks great and runs with the speed of a Shay. I know what I'm talking about because in the past I took a ride on the Roaring camp & Big Trees in Felton, CA; on the Yosemite Mountain Sugar Pine Railroad, also in California and on the Georgetown to Silver Plume (the loop) in Colorado. So I've seen many Shays.

Only there are two things that I am missing on the Accucraft Shay. First, a water glass. Second, a Goodall filling valve. Now I have to wait till the boiler is cooling down before I can refill the boiler.

The engine has a simple piston valve and not the real Stephenson or Walschaerts valve gear like on the Aster locos, but if you compare them you should look at the price, too. This is a fine looking and riding Shay for that price. I can recommend you this engine.

The track in my garden is not really flat because of the frost in the winter time. The ground is always moving up and down. On a certain spot where the rails were bending a little downwards just before a bend to the left, the Shay always derailed. But I found out why. The head of the mounting screw that holds the truck in place does not permit the truck to bend forward or backward. I've put a 2 mm ring between the truck and the engine and now it's moving in all directions. If there is one thing a Shay must do, then it must negotiate a rough track. And he is now.

Behind the cab is a dummy water tank for radio control, but the engine does not need that. I covered that spot with a load of fire wood.

A few years ago I bought myself two engines from Graham Industries in Rio Rancho in NM. One for the Climax from D.J.B. engineering England and the other for the D.J.B. Shay. While the Climax is running very satisfactory, I think that the SHAY will never appear because the wear and tear of the engine, not the loco. So I decided to use the steam motor for an early chain driven lumberjack loco. I took an L.G.B. flatcar, threw the trucks away and made it a two axle car. A boiler and gas tank from Cheddar made it complete. Laying down the engine on the flat car gave me the possibility to fit two more bearings on each side of the engine. But there is one thing I don't understand. Graham industries is making beautiful engines. You can compare them with Aster, which are for me the best there is. The Graham Shay engine has two eccentrics for each cylinder like it should be. If there are problems with some parts that worn out more than others, why not make (like in the computer business) an upgrade to replace those parts? It is certainly not that simple, but can it not be done? Anyway, I used mine on this flat car. I won't run out of steam for the time to come, but more out of money now.

Happy steaming over there,

John Smit

* * * * *

via e-mail

I see were you published the "Axle Pump for the Prole-

tariat by Jim Curry" I gave Jim full permission to publish this any were he liked. The only requirement would be a credit line as to were it was first published. He passed that info on to you.

The credit line should have been "First published in Small Scale Steam Hobbyist Vol. 1 Issue 3"

I am more than willing to share information as long as proper credit is given.

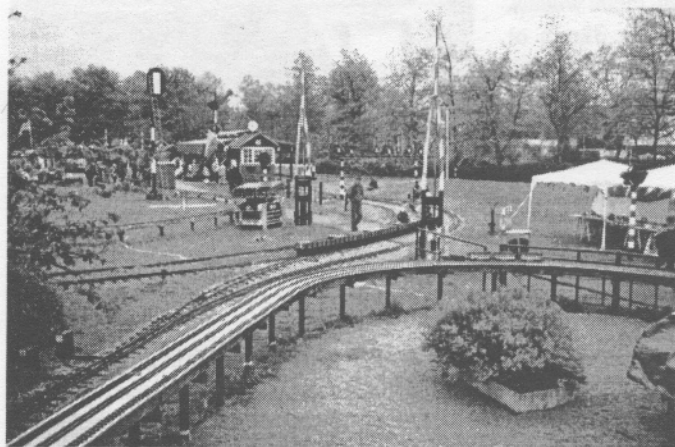
Ernie Noa

My mistake! I apologize for failing to include proper source credit with the article- ed.

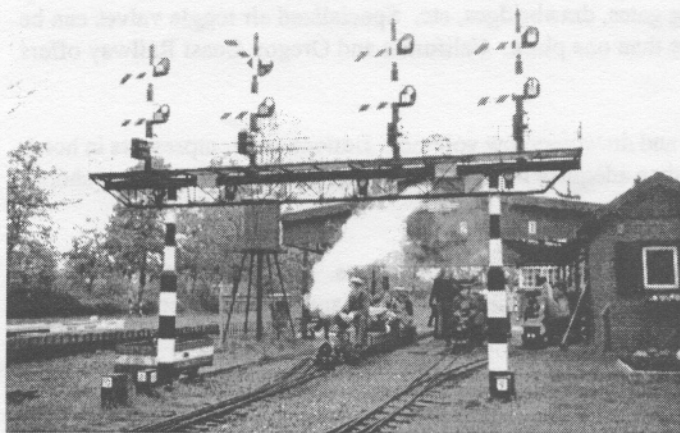
The Netherlands

Dear Ron,

In response to your request for articles, I would like to make a small steam report of the Stoomgroep West Zuiderpark here in the Netherlands. Small because they were unlucky with the weather, it was mostly raining all three days. But I have made some pictures to show you what they have in store.



Most of the members make their own locomotives for 5" or for 7.25". You can find them in the Zuiderpark in the city of



Den Haag. In picture 1 you can see the gauge one table in foreground. The (Aster) Reno is just passing by with three passenger cars. The table is made of concrete and laying on old measured telephone poles. The tracks are mounted on wooden plates and can be taken away at the end of the day. The second gauge is laying on the ground and is meant for 7.25". The top left of the picture shows an elevated 3.5" and 5" track.

Picture 2 is the main station with four tracks. Track 3 and 4 (left) are dual gauge for 5" and 7.25". Because of the bad weather there were not many locos and very little public. But they are riding every weekend, so they will surely catch up later on this year.

John Smit

John, that's a very fine looking club site. Thanks for sharing the photos and the information with us. - ed.



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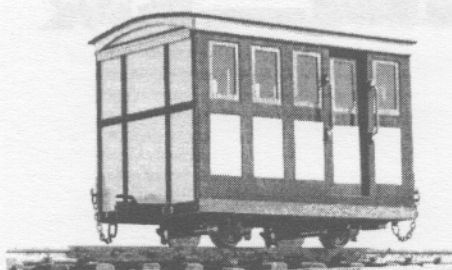
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WHAT'S NEW?

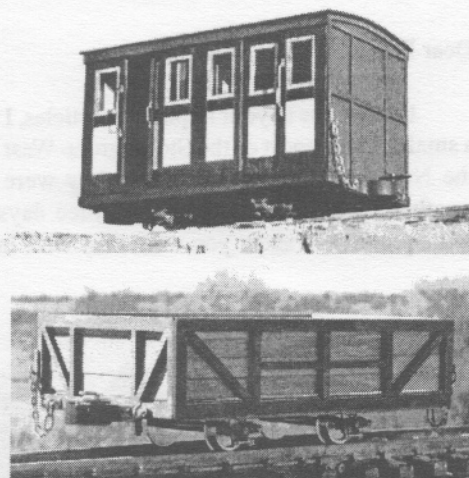
On Wednesday, October 15th, 2003, a group of modellers met in St Catharines, Ontario, Canada and formed the Canadian Association of Railway Modellers. We have actively started the recruitment of members on a nation-wide basis and have been in contact with railway modellers from across Canada from British Columbia to the Maritimes and in the United States. The Regions of CARM at present are Pacific, Prairies, Ontario, Quebec, Atlantic and International. Membership is open to all model railroaders regardless of their geographic location in or outside Canada. Communication with members is critical and a Web site (<http://www.caorm.org>) has been created and a newsletter will be distributed bi-monthly commencing with a Jan/Feb 2004 issue. Modelling skills will be encouraged and promoted and craftsman level skills will be recognized without encouraging competitiveness. A national gathering is planned to be held on an annual basis. Submitted by: Pete Moffett, CARM Secretary, 7 Jolie Court, St. Catharines, ON Canada L2M 6V5 - 905-934-6575

Twin Mountain Model Works, P.O. Box 60251, San Angelo, Texas is pleased to release a line of early Darjeeling Himalayan Railway four wheel coach kits in 16mm scale,



available early 2004. These coaches include a First/Second class six windows version and five windows Saloon Car. There are also plans to release a four wheel open wagon. These high quality kits feature easy construction using precision laser cut plywood parts and brass castings with fully sprung journals and metal wheels. The kits can be built in either 32mm or 45mm gauge. For more information contact

Twin Mountain Model Works. Website: <http://members.cox.net/cmalone6/twinmountain/> ● E-mail: cmalone@airmail.net



California Oregon and Coast Railway (COCRy) announced a new line of pneumatic components for the model railroad hobby entitled **E-Z Air Motion Control**. Pneumatic control systems have been used in the model railroad hobby for years and in outdoor applications pneumatics have proven to be the only reliable option.

Fully compatible with older systems, E-Z Air Motion Control components are a combination of items individually qualified from suppliers of industrial pneumatics and items designed and manufactured specifically to E-Z Air Motion Control plans and specifications. Reliability in the garden environment and ease of installation received top priority in the creation of this premium line of air operated motion control devices. For example, G scale advocates need to be concerned about ultraviolet degradation. The 1/16 inch ID tubing supplied under the E-Z Air Motion Control label is UV resistant and available in colors, i.e., black, brown, etc. to blend into the outdoor railroad. All components are fully constructed of brass, stainless steel or other corrosion resistant materials. Metering valves allow precise regulation of the speed of turnout movement.

A single air toggle can operate any number of actuators that in turn position turnouts and signals. These same components can be easily adapted to control other common items on layouts such as doors, crossing gates, drawbridges, etc. Specialized air toggle valves can be combined in pneumatic circuits to allow operation of actuators from more than one place. California and Oregon Coast Railway offers consulting and design services for special needs and applications.

Air supply requirements are minimal. Systems operate on 40-psi pressure and draw very low volumes. Bottom end compressors in home improvement warehouses that can often be found for \$75 or less are more than adequate for even the largest layout. Indeed, some choose to operate from an air tank they periodically fill at a nearby service station.

To achieve economy of scale, E-Z Air uses the same proprietary actuator to perform a variety of functions. In larger scales, they can be mounted between the head ties in a 'switch machine' housing that resembles those found in prototypical applications. Actuators can be mounted under the table and used in many other model railroad scales.

Priced to be competitive, California and Oregon Coast Railway supplies hobbyist directly though mail order (see their ad in this issue for contact information) and their Web site at <<http://www.cocry.com>>. They also distribute E-Z Air components to hobby shops throughout the country.

November 13, 2003 -- In moves that will make small-scale live steam events larger and more frequent up and down the U.S. West Coast and into Nevada, hobbyists have purchased a portable layout and an enclosed cargo trailer to move it in.

The Pacific Coast Live Steamers -- a group with no officers, no rules and no dues -- took up a collection in October and purchased a 32-foot by 60-foot 45mm (Gauge 1), dual-track modular layout that had been constructed by NTRAK Modular Railroading Society Inc. of San Luis Obispo County, Calif. The NTRAK group sponsored a steam-up at the county fairgrounds in 1999, built the track for the event and it has been used only one time since. The layout has 48-foot-long steamup bays and uses .250-inch aluminum track and tiestrips provided by Llagas Creek Railways of Morgan Hill, Calif.

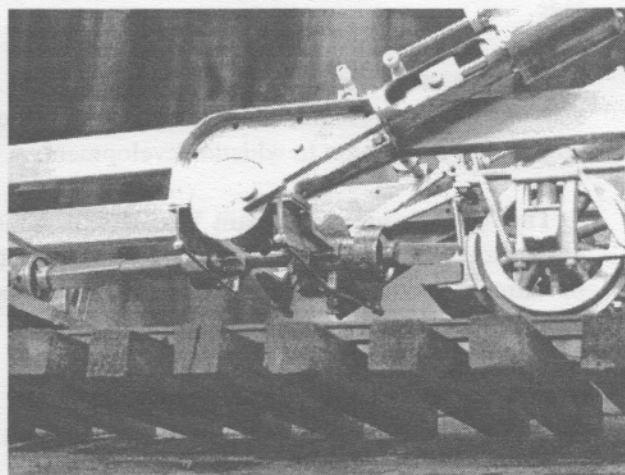
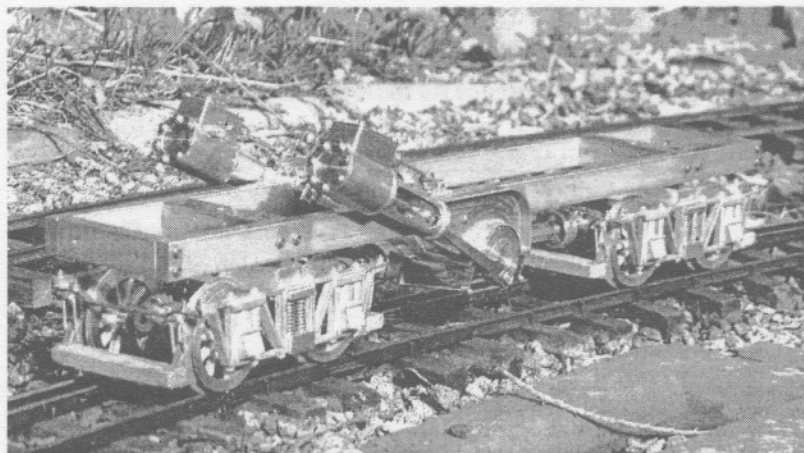
Steam Events LLC, a Nevada corporation dedicated to providing live steamers with more opportunities to enjoy their hobby, fulfilled a promise made last year and has purchased a 20-foot trailer which will hold not only the NTRAK modules, but also the modules of the 40-foot by 80-foot layout built by the Pacific Coast Live Steamers in 2001.

These two layouts will be used at the annual National Summer Steamup, to be held next year July 21-25 in Sacramento. In addition, Steam Events is exploring other new venues where these large-scale live steam layouts can be set up to benefit the hobbyist community.

The NTRAK purchase was organized by Sonny Wizelman of Los Angeles, Calif., who made a lead donation; the second donor was Anthony Dixon of Livermore, Calif. Other PCLS members making donations toward the purchase of the NTRAK layout included Jeff Williams of Livermore, Calif., Bill Turkel of Upland, Calif., Dan Pantages of Surry, British Columbia, Richard & Melinda Murray of Millbrae, Calif., Jim McDavid of Fremont, Calif., Clark Lord of Las Vegas, Nev., Jim Gabelich of Palos Verdes Estates, Calif., Richard Finlayson of Saratoga, Calif., John Coughran of Manhattan Beach, Calif. and Dave Cole of Pacifica, Calif.

Steam Events LLC is the promoter of the National Summer Steamup, to be held next year in suburban Sacramento, Calif., July 21-25, 2004. For more information on the steamup, visit <http://www.steamevents.com/> or e-mail steamup@steamevents.com.

Catatonk Loco Works, PO Box 335, Newark Valley NY 13811 ● Phone: 607-642-8119 ● e-mail: docsteam@steaminthegarden.com has a new geared logging loco under development. Built to 1:20.3 scale, it's modeled after an 18-ton, 2-truck Climax. It will be gauge adjustable to gauge 1 or gauge 0 and will have a crank driven water pump with bypass. We expect to have a working pilot model at Diamondhead '04 for Show 'n' Tell. We are taking reservations now and expect to deliver the first batch of completed locos in summer '04. For more information, or to get on the reservation list, contact Ron at the above phone or e-mail address.



Book Review

By Larry Bingham

A Review of *The Whistle's Moan—American Steam Whistles* by Edward A. Fagen Published by the Astragal Press 2001, \$39.95, 277 pages, 8.1/2 x 11, soft cover.

When Ron told me he had a book on steam whistles and asked if I would be willing to write a report on it, I kind of jumped at the offer because I had never seen a book on steam whistles. In fact, the complete body of literature on steam whistles is pretty much limited to articles in periodicals and a few paragraphs in railroad books.

This is a very scholarly work, and Ed Fagen is uniquely qualified to be its author. He is a retired physicist, specializing in the science of acoustics, with a background in music. He is also an avid collector and restorer.

The book is a definitive work, with information on just about every aspect of whistles. It should appeal to the theorist, the historian, collector, builder, blower, restorer, student, and the connoisseur.

A list of the chapter headings along with a descriptive comment will reveal the wide variety in its contents:

1. Introduction.....A poignant reminder of our heritage.

2. The Steam Whistle In Historical Context.....A short but unique presentation of the history of the steam engine and its relation to whistle development.

3. The Applications Of Steam Whistles.....A fascinating account of their development and proliferation in railroad, marine, industrial, and institutional applications.

4. The Steam Whistle In Popular Culture.....Examines the emotional and cultural impact upon generations during the steam age.

5. Whistle Manufacturers And Their Products.....An in depth description of over twenty American whistle manufacturers with reproductions of catalog illustrations. Invaluable information for purposes of identification.

6. Collecting Whistles.....The psychology of collectorship, organization, methods of acquisition, display and documentation. The many facets of this fascinating hobby.

7. Restoring and Conserving Steam Whistles.....The function of the conservator and the details of fine craftsmanship. Many important shop techniques in working copper and brass.

8. Blowing Steam Whistles.....A fine whistle that is never heard is, as Ed Fagen so eloquently states, "deprived of its reason for existence". However, the logistics of blowing a full size whistle can be pretty formidable. But with a coordinated group effort it can be done in style as a communal whistle blow. Whistle lovers have get togethers, (steamups), just like train nuts.

9. How a whistle Works..... This chapter riveted my attention and I was surprised to learn that the exact mechanism that causes the gas in the bell to resonate is still not well understood, and is a subject of contention among different groups in the science of acoustics.

Appendix A.....A complete illustrated glossary of whistle terms.

Appendix B.... An extensive illustrated listing of whistle patents.

Reading this book has been an educational and uplifting experience for me. I have read through it once, glossed over it again to refresh my thoughts for this report, but it will never be finished. It will always be close by for reference.

I recommend it for all train and boat buffs and any one with a curiosity about the voice of the industrial revolution.



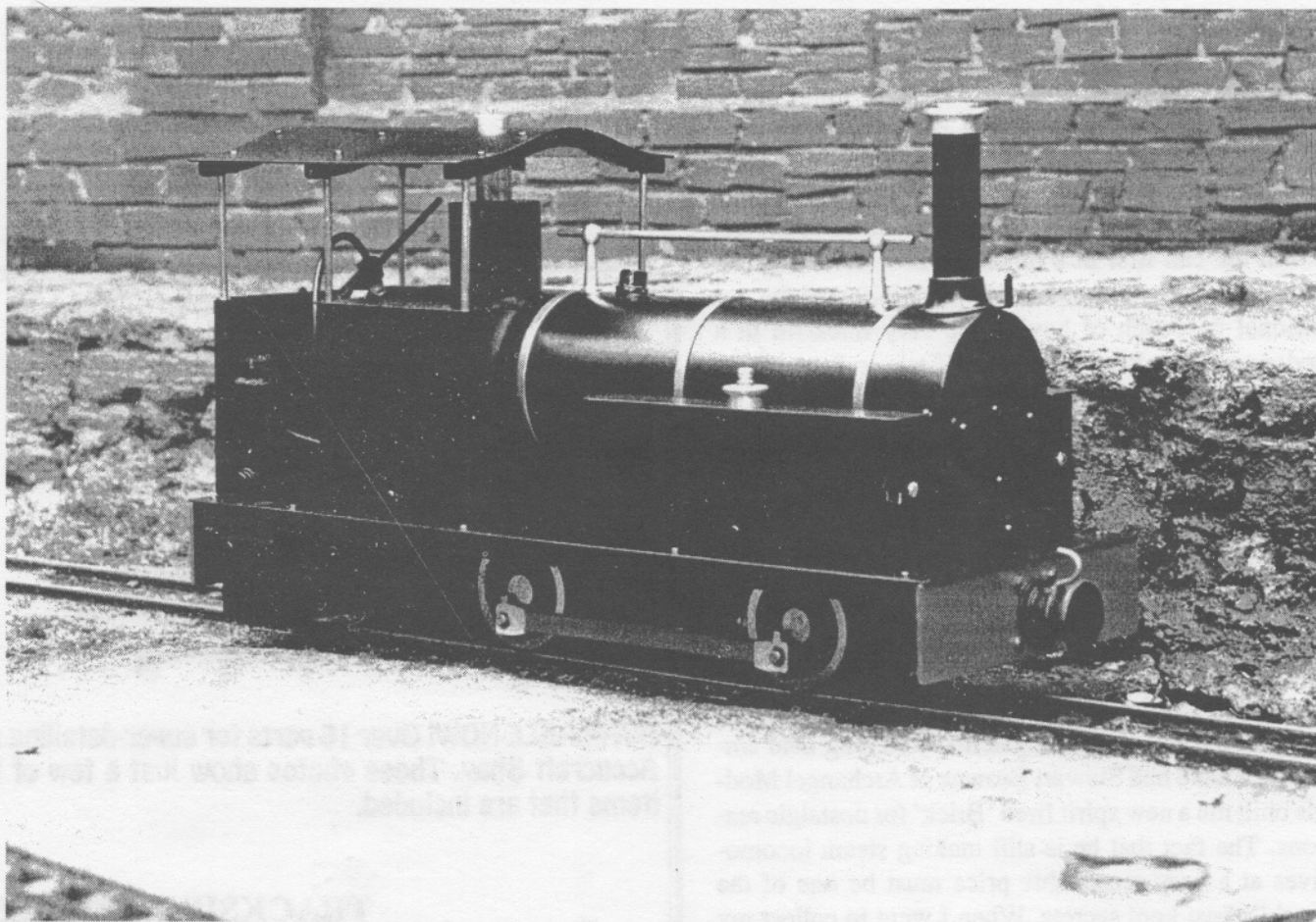
GAZING INTO THE FIRE

by Peter Jones

An old friend returns...

Although life treats me quietly these days, one or two items have come across my horizon in the last year to warrant me assembling this random jumble of notes for your delectation. Before going any further, I have to say a big thank you to the many readers that have kept in touch and send nice thoughts.

for 20 minutes is outstanding. When I first heard of the project, I was sceptical. It looked good but my mind wandered back to the 3.5" gauge 'Rocket' of some years ago. This was a lovely looking model at a reasonable price but was so ill thought through that performance varied from poor to non-existent, depend-



The Author's Archangel BRICK, fresh from the factory, simmers quietly on a siding.

I have now seen the Hornby 00 gauge live steam 'Mallard' in action and am very impressed with the whole design concept. For such a small engine to steam

ing on the batch. But the new Mallard seems to do what it says it will do and uses some considerable ingenuity of design. It is too early to tell yet if it will

throw up any long term problems but it looks good so far.

This got me to thinking about whether we can be a bit less conventional in our own thinking. It is some years since Colin Binnie postulated a plastic boiler. Many people laughed at the time. But we now boil water in plastic electric kettles. In disposable cigarette lighters, flame emits from a plastic housing. As the man said: it all depends what you mean by plastic !

In Chuck's survey, for the question about what loco I would like to see on the market... my vote was for a hyper cheap live steam loco.. made from a few mouldings.. even picking up current from the track to boil the water. No frills. Very safe... say a small Porter for under \$250, compatible with LGB track and current. Oh well.... perhaps just a pipe dream.

In Jeff Williams' review of the K-27 he very rightly voices his concern about the high superheat temperature and that thin steam oil might break down and cause carbonizing. Having been there before, I found the answer was to use a much thicker grade of steam oil.. the dark green oozy stuff that large scale live steamers use. This takes the punishment of high temperatures fine and banishes the problem. If you have to persuade such treacle to go into small openings, warm the can first in a bowl of hot water. I used to have a full size road steam roller and followed the traditional approach of having the very thick oil in a sodapop bottle kept next to the firehole door whilst steam was being raised.

With the problem of filling large boilers with lots of syringe plungings, there are alternatives to funnels. Yes, there are the garden hand sprays converted with some plastic tubing. But if filling a large boiler is going to be a regular chore, it really is no big deal to get an old auto windshield screenwash motor and run it off a small 12v battery. As you gather; I was born laqzy and may probably die in that happy state too.

It is rare for me to buy a new small scale live steamer but I have recently achieved a long held ambition. I have had Stewart Browne of Archangel Models built me a new spirit fired 'Brick' for nostalgic reasons. The fact that he is still making steam locomotives at a very reasonable price must be one of the world's best kept secrets. When I went to collect my loco from him, he showed me a part-built order for an articulated 4 cylinder 2-10-10-2. It is a bit... erhm.... big, to put it mildly. This isn't meant to be an advert for him but, in view of the almost mythical status Archangel engines have, readers may care to note that he can be contacted at Ty'r Felin and New Mill, Drefelin,

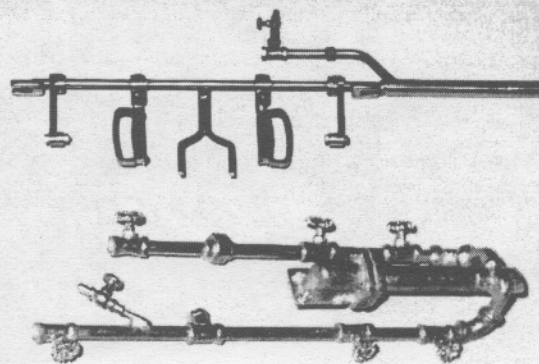
Drefach Velindre, Llandyssul, Carmarthen, SA44 5XB, Wales, UK.

In the UK hardware chain store of Wilkinsons, there is a rather useful product. As it is made in the far east, one assumes that something similar is available in the USA. It is a dish drainer mat which takes the form of a soft plastic openwork draining mat for the sink (a mixture of ovals and circles). It comes in a variety of colours and is about the size of this magazine opened out. Why is it of interest to us ? Well, when cut into strips, it makes very good safety fencing for high tracks up on boards. It looks like cast iron fencing but if a train derailed, the softness of the soapy plastic means that it will not scratch anything. It is totally weather resistant and pins easily to the sides of the board with tarpaper tacks... and it is CHEAP.

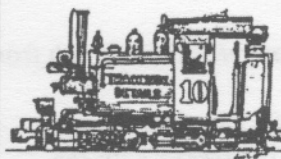
Finally, could I comment on the quotation in the End of the Line comments in a recent SitG (Nº 71) - *"Live Steam is the ideal hobby. It is very expensive, fiendishly difficult and mildly hazardous"* I find women pretty much the same.



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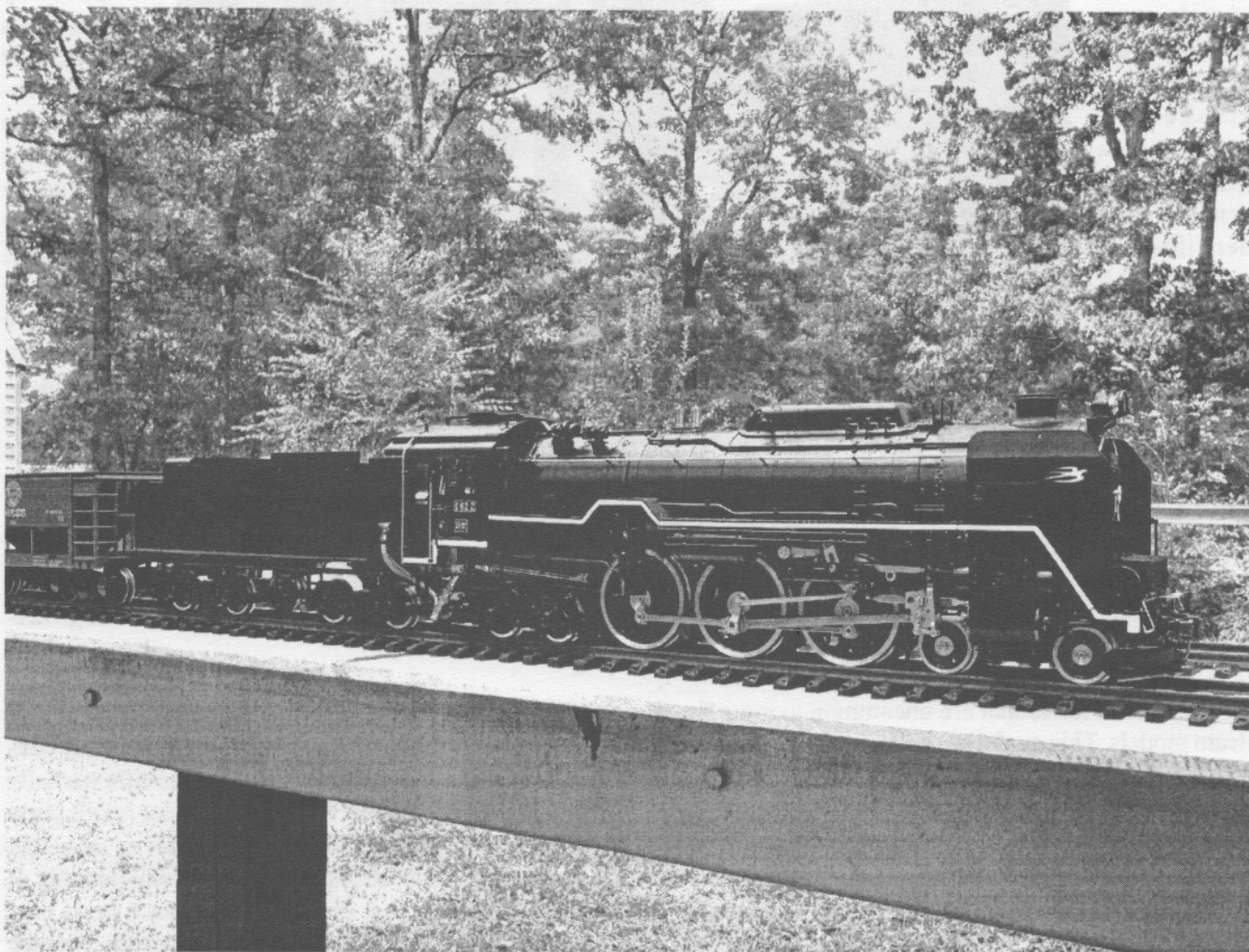


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Aster's New JNR C62/2

review and photos by Ross Schlabach



Aster's newest, the JNR C62/2, hauls the freight on Jim Pitts' elevated track in South Carolina.

Aster's newest live steam locomotive is not just a rehash of an older model. Instead, it is stunningly re-engineered from the ground up. And as Aster has pointed out in their initial advertising, this model has about 1,000 parts – more than twice the number of parts as were in the previous version. I had the oppor-

tunity to carefully inspect the first production engine delivered here in the US. Unfortunately, the translations for English language manuals & assembly diagrams have not been completed. This meant we could not properly conduct the first run trials of this new model. Still, there's a lot to share about this new en-

gine.

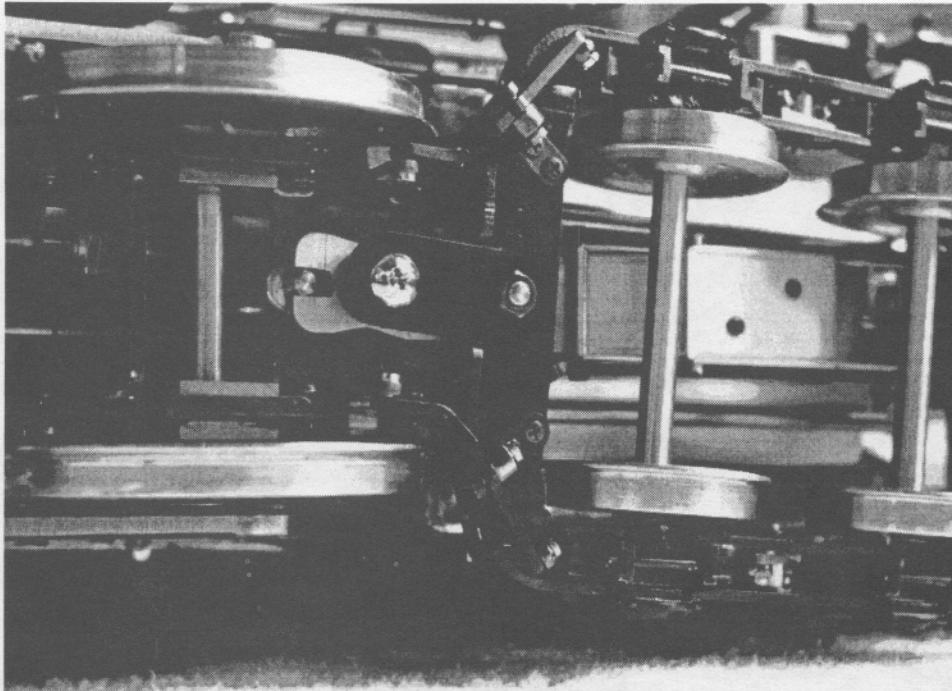
There are many upgrades from the previous two versions of the C62. Let's start with a quick overview and work our way down to the details. At first glance, the C62/2 is much more highly detailed than its two predecessors; and at 30"+ in length, it's a big Hudson. Like most reproductions of Japanese prototypes, this model is in 1/30th scale. Nevertheless, it looks in scale with and right at home in front of a string of MDC 1/32nd scale cars (check out the photo). Despite its obviously non-American style smokebox, smoke deflectors, and a smallish tender, this engine has a very powerful Western style appearance that may appeal to modelers in the US and around the world – not just the Japanese market.

There are a number of features that are uncommon to most live steam models. This model has a locomotive type boiler with a full wet firebox, multiple flues and a superheater. It features an easily accessible boiler blowdown under the left side of the cab. That blowdown is positioned near the bottom of the mudring – albeit slightly above the lowest point of the boiler. The boiler sits, beautifully balanced, on a fully sprung and equalized chassis – including all driver axles and the trailing truck. The trailing truck also has a self-centering mechanism that should help the locomotive track smoothly through curves.

The driver axles run in ball bearings and are designed so that the locomotive can handle 2 meter radius curves. The cylinders are equipped with drain cocks, easily controlled from the cab, so that "water fountain spray" from the stack or cylinder hydraulic

lock at the start of a run is unlikely. The C62/2 also has a large mouthed lubricator cleverly hidden on the upper deck of the pilot under a sliding cover. This locomotive is designed for firing either by coal or butane gas, and the systems for each have been substantially redesigned. The gas burner is unlike that of any previous model and is in the shape of a flat burner plate with lots of small burner nozzles drilled into its upper surface. This design spreads the flame pattern

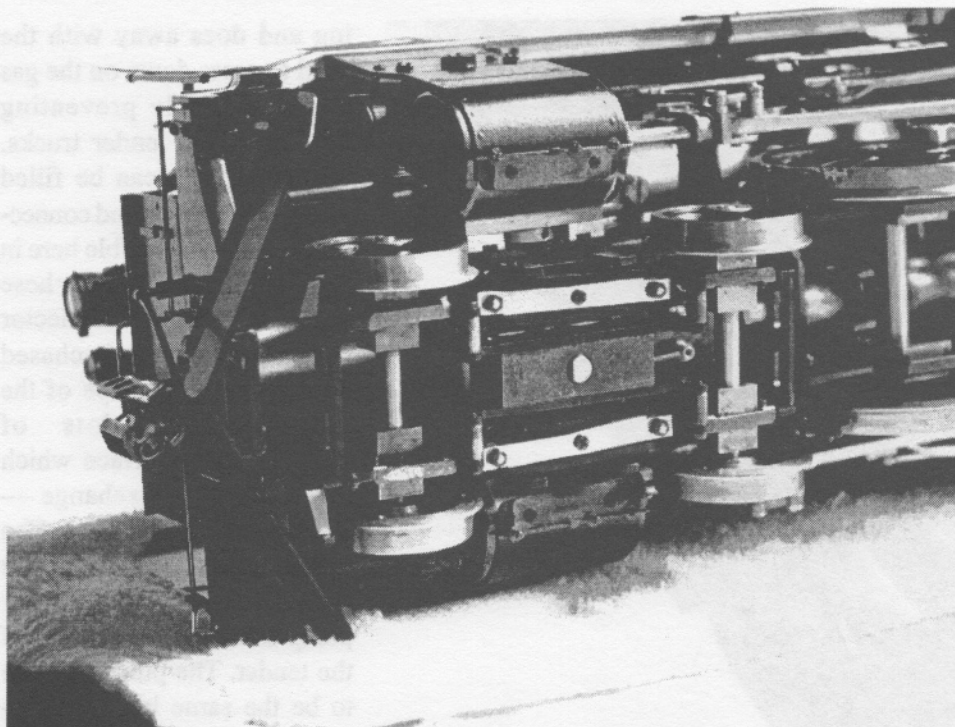
and has the potential to offer greater efficiency than previous burners. For coal operation, the gas burner plate can be easily slipped out and a heavy, cast, stainless steel grate slid back in its place. Warping of the fire grate should not be a problem with this model. There is a large firebox door with an over-



Self-centering spring mechanism presses against the short post located just in front of trailing truck pivot point (Philips head screw). The equalizing arms and the firebox ashpan are clearly visible in this picture.

center spring that keeps the door either opened or closed — as needed. Considering the number of controls in the cab and the fact that the throttle partially blocks the door, access to the firebox door is still fairly decent. Nevertheless, the firebox itself is so large that spreading a uniform bed of coal will be challenging. It should be noted that the model includes a brass coal scoop, but its lightweight construction and short handle may reduce its usefulness.

The cab layout also has some significant changes. In addition to the previously mentioned drain cock control and the functional firebox door, the engine is equipped with a blower, whistle control, screw-type reverser, and a smoothly operating, partial rotary throttle. A couple of advantages of the partial rotary design are that there is no needle valve mechanism to bind up as the locomotive cools after runs and full



Detail of the pilot truck shows that axles ride in large, sliding, bearing blocks. The drain cock is the unusual slot on the cylinder near the top of the picture. The piston rod extensions on the front of the cylinders can slide from side to side to provide pilot truck clearance for tight turns.

steam shutoff can be accomplished without any force. Normally, needle valve throttles have been favored for their fine control of steam flow.

The water glass fitting has been updated with a brass housing that wraps around the back half of the glass – providing some protection from damage. The newest addition to the backhead array is a gas tank heater valve that controls a supply of steam to the tender — keeping the gas warm. This should be very beneficial for those modelers who operate their locos in cooler climates and normally suffer from degraded gas burner operation as outside temperatures drop.

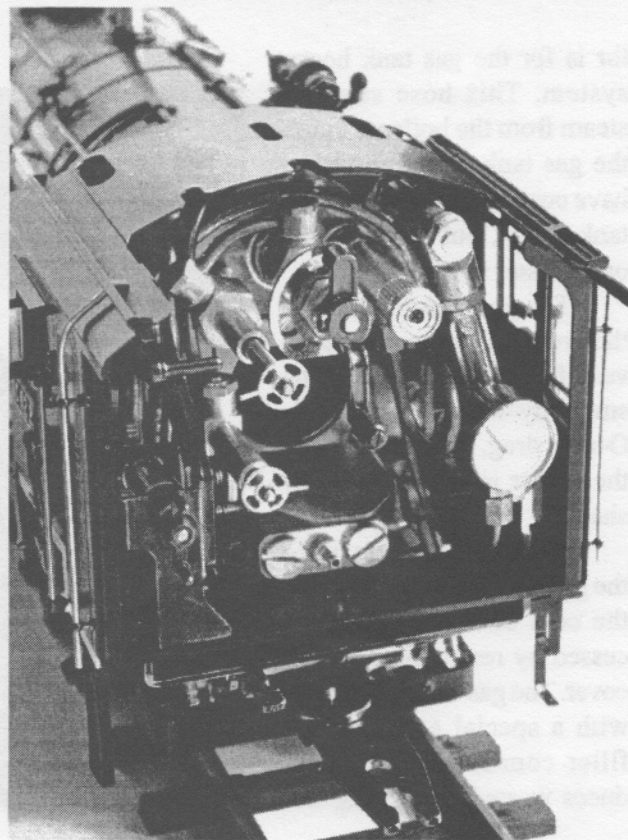
Another addition to the rear deck of the cab is a lever that opens the stainless steel ashpan under the locomotive.

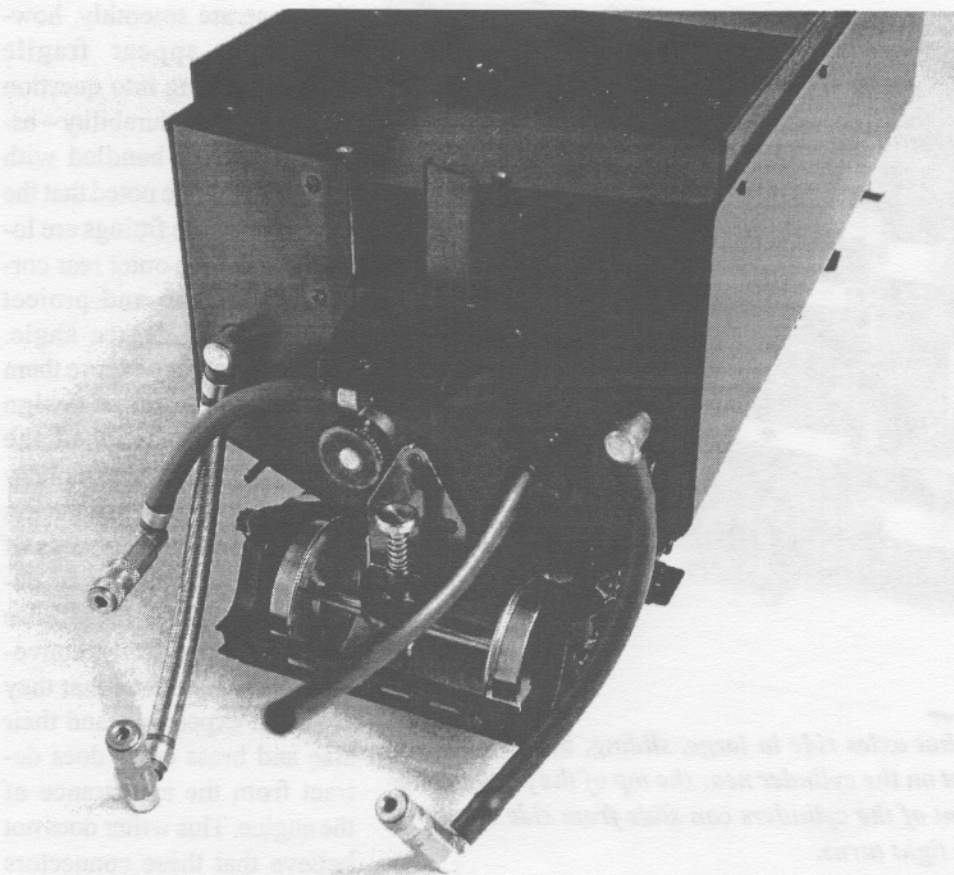
For those who like to equip their locomotives with R/C gear, the space in the cab is limited. A single servo for throttle operation could be accommodated in the cab, but adding servos for blower or reverser may not be possible. The receiver and a flat NiCad battery will fit in the shallow tender bunker.

Looking at the tender, one immediately notices that there is no coal load provided and that there are four hoses protruding out the front – not three as in most previous Aster models. All but one of the hoses are equipped with quick disconnect fittings. These fit-

tings operate smoothly, however they appear fragile enough to bring into question their long-term durability – especially if not handled with care. It should be noted that the male half of the fittings are located under the outer rear corners of the cab and project down at a 45 degree angle. This position may expose them to damage. A better design would have positioned the male connectors horizontally to provide more protection from the bumps and bangs of normal handling or even derailments. While these hose connectors are fairly convenient, I have learned that they are quite expensive; and their size and brass color does detract from the appearance of the engine. This writer does not believe that these connectors are worth the additional cost –

except for the gas line which would otherwise be quite difficult to hook up. The one hose without a connec-





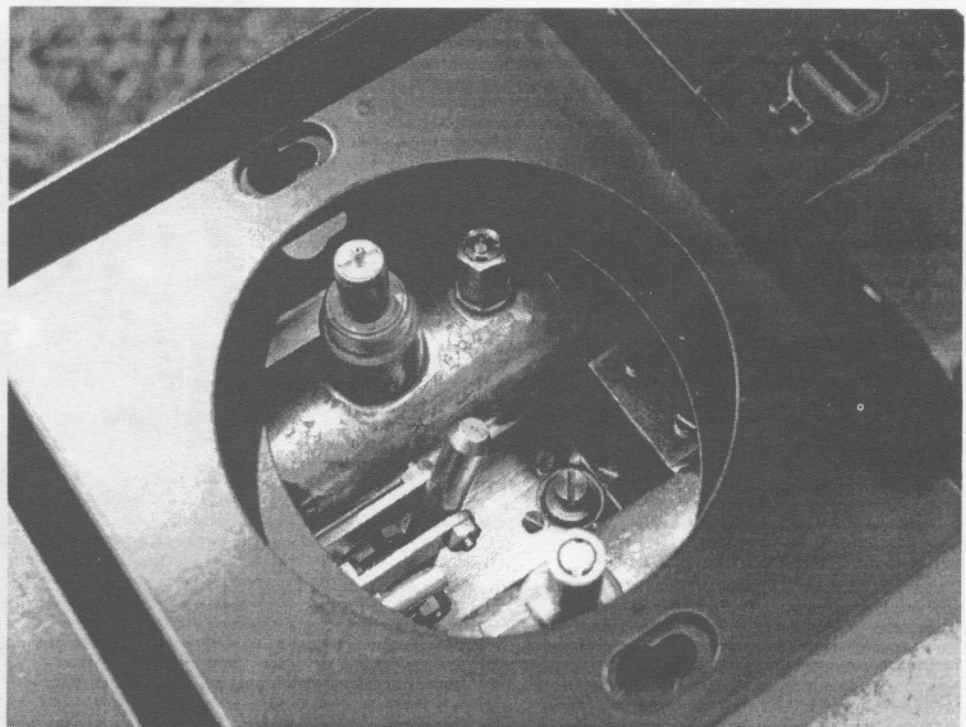
Medusa? Lots of hoses connect the tender to the loco. The hose with no connector is the new gas tank heater line.

tor is for the gas tank heater system. This hose supplies steam from the boiler to warm the gas tank. Some modelers have custom-made this type of tank heater, but this is a first on an Aster model.

The gas control valve on the front of the tender has a very fine thread — operating smoothly with no noticeable O-ring drag. The gas tank in the tender is unique in its U-shape.

Both the water supply and the gas tank are located behind the coal bunker and are accessed by removing a sliding cover. The gas tank is equipped with a special screw-on gas filler connection which reduces wasted gas during fill-

ing and does away with the need to press down on the gas tank — possibly preventing damage to the tender trucks. While the tank can be filled using gas canisters and connectors normally available here in the USA, the special filler hose with the screw-on connector can be separately purchased from Aster. The shape of the tank provides lots of metal-to-water surface which helps with heat exchange — keeping the gas warm. The U-shape also allows the gas tank to wrap around the water pump situated in the center of the tender. The pump appears to be the same large one offered in the Aster trackside pump accessory package. This should be a welcome addition for those modelers who have suffered endless pumping to fill their Aster Mikado boilers. Another new feature (lots of these, aren't there?) on this model is a drain located behind



A peek into the tender...

the tender pump — just above the rear truck. This is accessed with a medium-sized screwdriver and allows water to be drained at the end of a run without having to pick up the tender. A final feature on the tender is a pair of doors at the front of the coal bunker. These are equipped with over-center springs that will hold the doors open for better firebox access during coal firing.

For those fans of coal-firing, this locomotive is better equipped for coal operation. There is a very sturdy coal grate, a large & well-functioning firebox door, and a functioning ashpan. The ashpan is fully enclosed so raking the grates may be difficult. This writer is no expert on coal-firing, but there are a couple of important concerns obvious even to me. While the smokebox door can be opened easily by just undoing one screw, there is no front end access to the flues or the bottom half of the smokebox. The flues can be accessed from cab through the firebox door, but there is no apparent way to get at the flues from the smokebox end — short of some serious dismantling. Maybe the manuals, when they come, will offer an easy solution. We'll have to wait and see.

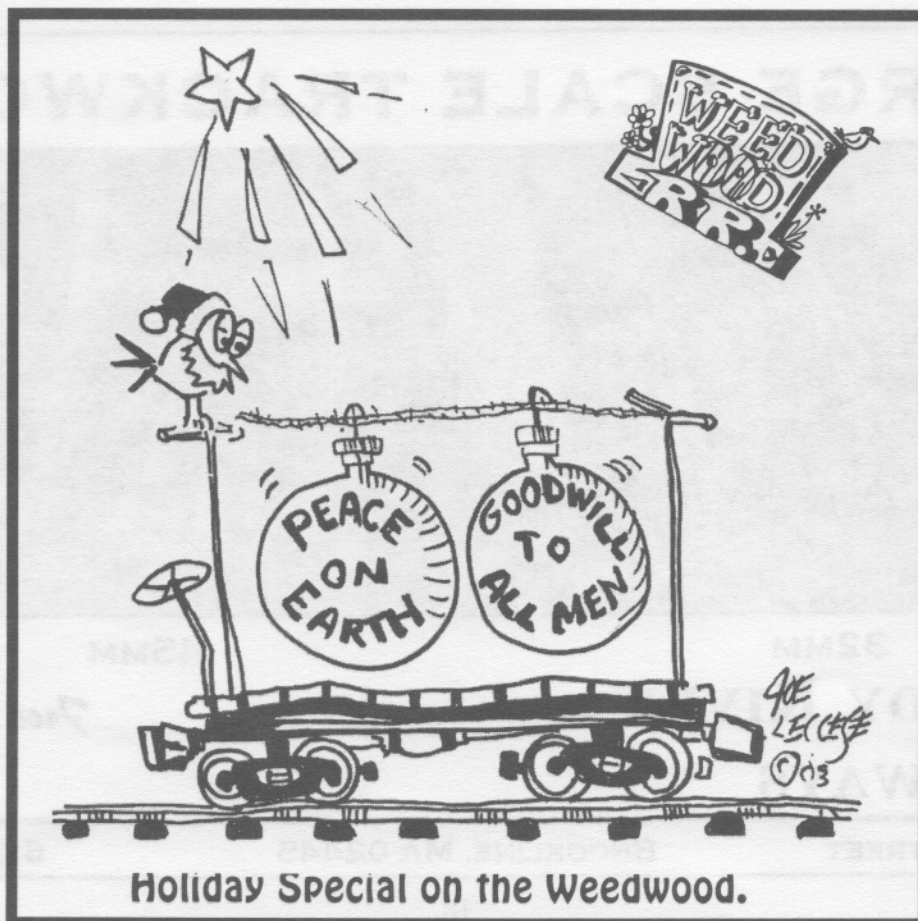
The other concern involves the level of detail on the model. Coal operation creates lots of soot and ash. The C62/2 has so much detail just in the sprung and equalized running gear alone, that coal operation could easily foul the mechanism even if careful cleaning practices are maintained.

While I was not able to fire and run this engine, my initial impressions of the model were quite favorable. This locomotive model is beautifully executed and has the potential to

be as good as or better than Aster's renowned GS-4. It appears that Aster has worked hard to address most of the major gas-firing headaches and coal-firing problems present in previous models. The gas tank heater should permit better burner operation on cold days if it functions as intended. The design of the gas burner is somewhat like those on a kitchen stove and should offer quieter operation. With its multiple flues and wet, locomotive style boiler, this engine has much greater surface for heat transfer and consequently may be more efficient in gas-firing than single flue models. I would note that unlike most gas-fired engines, this locomotive does have a steam blower (primarily for coal operation) and the use of an external blower for gas start-up is recommended as per alcohol-firing methods.

The heavy cast coal grate and large firebox door should ease coal-firing duties. For reasons I've previously mentioned, coal operation is probably not advisable (just like the Allegheny) but there are doubtless some of you who will be able to successfully coal-fire the C62/2. As far as pulling ability is concerned, we will have to wait for our first running trial. Nevertheless, I believe that given its weight, boiler design, and especially its sprung and equalized running gear, this locomotive should be a strong puller. Hopefully I can be on hand for the first firing of this engine and report back on the results.

(the author tells us that he will have his own C62 running at Diamondhead '04....look for it there! - ed.)



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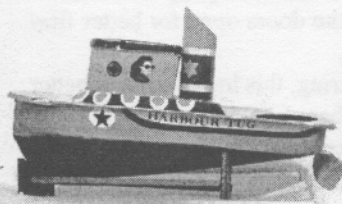
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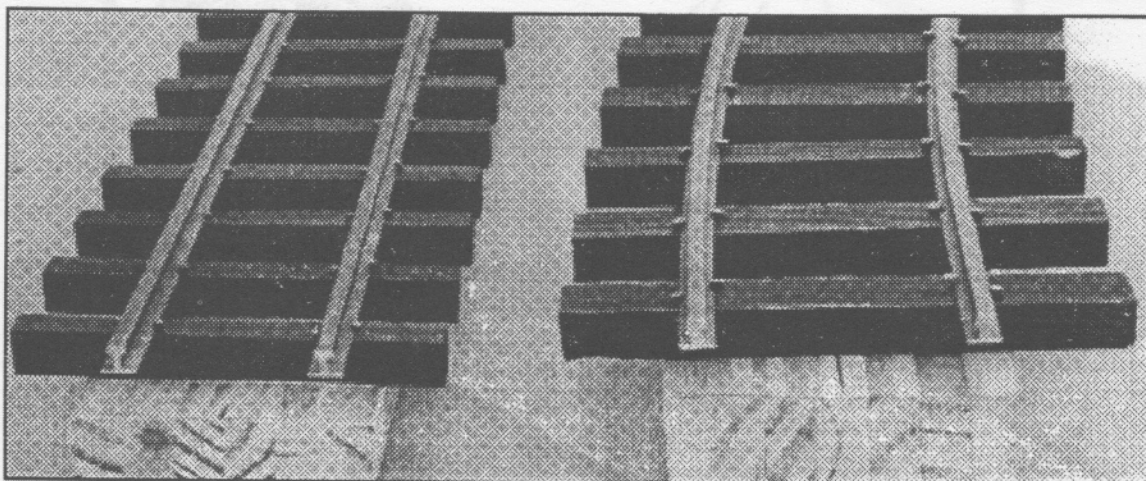


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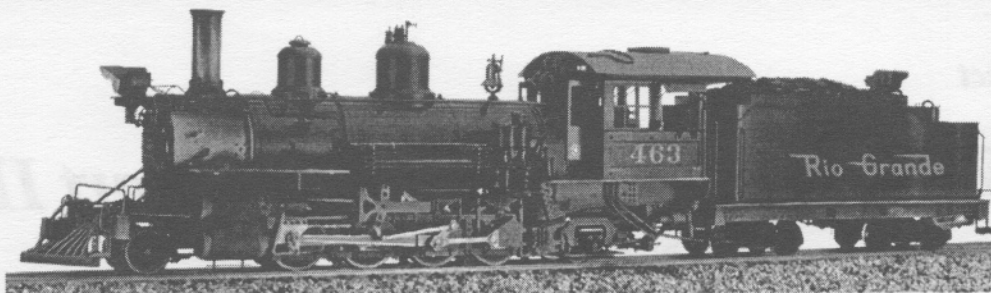
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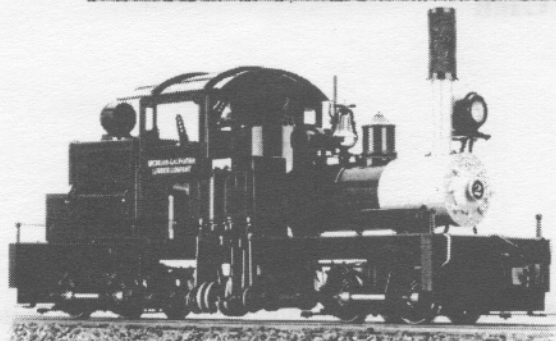
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DENVER Project Locomotive - Part III

text by David Hamilton

photos by Curtis Glen

The boiler segment of David's DENVER project

The Boiler Assembly

The boiler is made from a copper pipe, cut and filed to the required length. Ken Orme had some very helpful hints that he passed on to me for this item. I cut a sheet of paper to the finished length of the boiler and wrapped it around the copper pipe, keeping it flush with one end. This way, I was able to get the pipe cut and filed to the right dimensions.

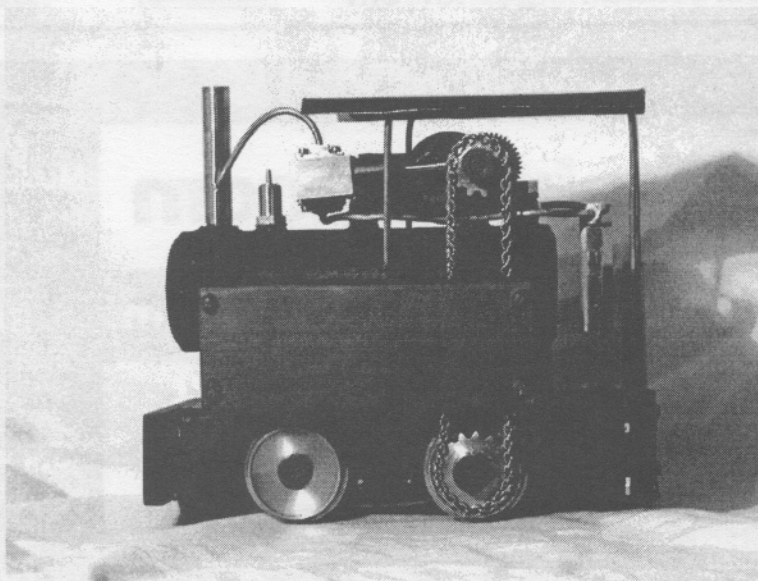
The boiler has two engine mounts, two bushings and one stack mount on the top. On the bottom, there are two boiler mounts, where the boiler is secured to the locomotive chassis. It is important that the holes for these items be laid out accurately. I took the sheet of paper that I had used to get the length of the boiler and wrapped it around the shell again. Drawing a line down the edge of the page where it overlaps, and cutting the page on this line, gave me a sheet of paper that was very close to exactly the circumference of the boiler shell. By folding this sheet in half and placing it squarely on one side of the boiler, I then scribed a line on each edge of the folded sheet. This gave me a center line on the top and bottom of the boiler. From there, it was quite easy to lay out the holes

to be drilled on the boiler shell. All holes were center punched, center drilled and then drilled out the finished size.

The boiler end caps came finished from Sulphur Springs Steam Models. I found them to be a very loose fit in the boiler shell. I was concerned as to how I would be able to hold them in place for soldering. Ken gave

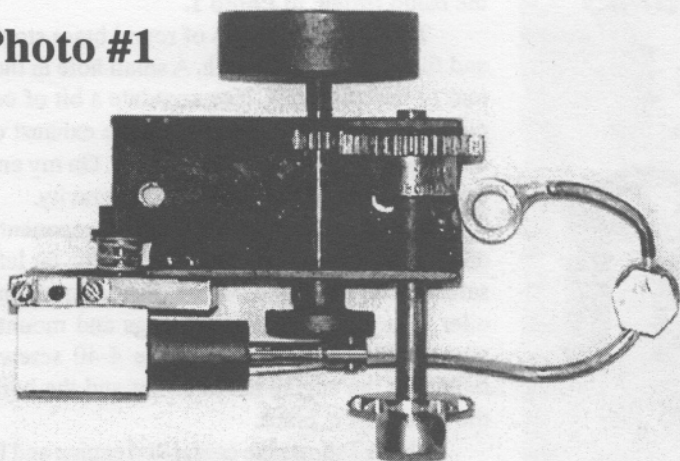
me the hint of how to expand the outside edge of these items. On a block of wood, I stood the caps on the outside circumference of the flange. Holding a center punch against the inside edge of the flange and whacking it with a hammer expands the circumference very slightly. Doing this at regular intervals all the way around the inside edge of the flange eventually made it fit firmly inside the boiler shell.

It needs to be a very firm fit, but not so tight that the solder has no joint to flow into. I didn't have it firm enough first time, and when I had the parts hot enough for the silver solder to flow, the boiler cap flowed right along with the solder, right into the center of the boiler shell. I was able to get it out very quickly, while it was still hot. I repeated the above technique until I had a very firm fit, requiring light hammer taps to position the part just so. The second attempt at soldering the end caps in place went



The Author's completed DENVER Project Loco.

Photo #1



much better. Before I did the soldering, I finished the other boiler components so that all the soldering could be done at one time.

All of the bushings and mounts were made from round brass stock. Each was cut a little oversized and finished to the right length on the lathe. Smaller diameters were turned, making shoulders for the parts to mate with holes drilled into the boiler shell..

The two bushings had to be drilled and tapped. The drawings call for a 1/4-40 thread on both the bushing for the safety valve, and the one for the banjo bolt that connects to the steam pipe. The safety valve comes finished, with a 1/4-40 thread, from Sulphur Springs, so there was no alternative but to purchase a 1/4-40 tap. But given the price of the taps and dies in that thread, Ken advised that I could use 1/4-28 instead, since I had a tap and die of the latter thread on hand. So I used 1/4-28 for the steam bushing and banjo bolt.

The engine mounts and boiler mounts have holes drilled in one end, tapped 4-40 for screws that will hold the engine to the boiler and the boiler to the chassis. Silver soldering of all the parts went quite quickly, after I got the end caps to fit properly. As the boiler mounts are a bit top heavy when in place on the upside down boiler, I drilled two corresponding holes in a strip of scrap metal. I fastened the strip of metal to the boiler mounts with 4-40 screws. This helped keep them balanced and in place for soldering. If you are doing this, and you have some wire on hand, you can tie the parts in place for soldering. Another hint from Ken.

While I was in the mode for making boiler

fittings, I made one that would screw into the banjo bolt bushing.. This would be a "Denver Project Locomotive Boiler Hydrostatic Test Facilitator". That is another gizmo to assist in a hydro test of the boiler after soldering! It is simply a piece of round brass stock, with a 1/4-28 thread on one end and a hole drilled through the middle. There is a little ridge along the body that helps hold a water hose in place. The water hose is attached to a hand pump that has an accurate pressure gauge on it.

The banjo bolt itself is a very similar fitting, made from a length of hex stock. The body, with a hole drilled almost right through the center, is turned down and threaded 1/4-28 at the bottom. The mid portion is turned down a bit more, and the smaller diameter has a small hole drilled right through it for the passage of steam from the boiler to the steam pipe that will be fastened to the banjo fitting.

The banjo fitting is a small piece of round brass stock with a hole drilled right through. And another one from the outside circumference to the center hole. The end of the steam pipe is silver soldered into the latter hole. The banjo fitting can be seen in the photo.

When soldering was complete, I screwed the water test gizmo into the banjo bolt bushing and hooked up the water pump. The boiler held pressure with no leaks. I tested the boiler with water pressure up to 100 psi.

The oiler and oiler cap were next to be made. The oiler is simply a piece of hex brass stock, cut and finished to length. Then a hole is drilled almost right through the center. The top portion of the hole is tapped 5/16-24. The drawings call for the body of the oiler to be turned round from hex. I chose to leave the hex stock "as is". That's just my preference in this case.

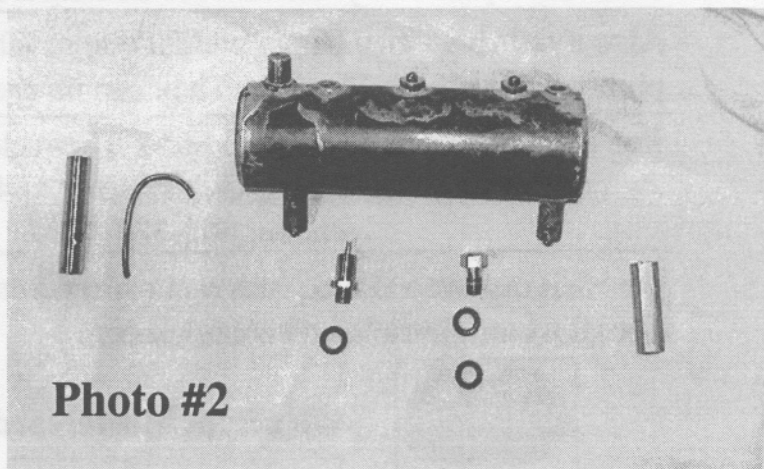
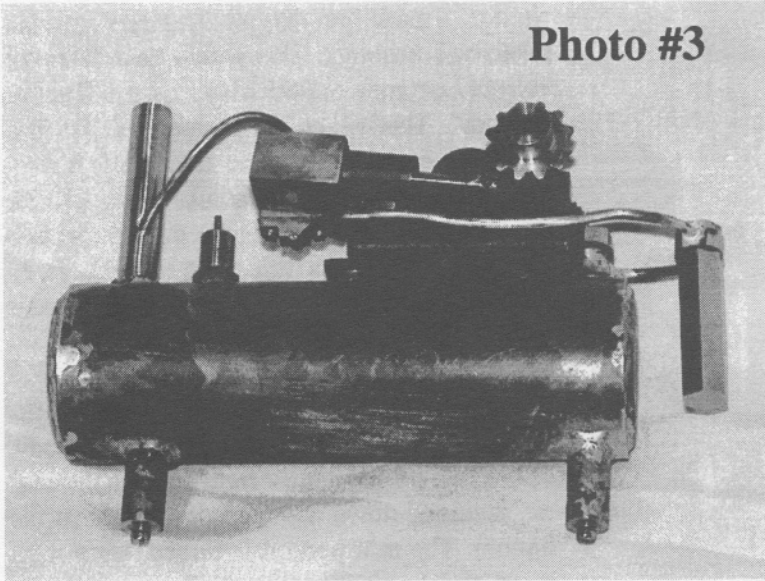


Photo #2

Photo #3



The oiler cap is a shorter piece of the same hex stock. Here again, there is a hole drilled almost right through the center. And another one through, from one side to the other, near the top. This will accommodate the steam pipe passing through it.. A length of the part is turned down and threaded 5/16-24. The copper pipe was soldered in place on the oiler cap, running right through it, and a small hole was drilled into the copper pipe, inside the oiler cap, to allow for steam coming from the boiler to condense in the oiler and take oil

to the cylinder. The oiler cap can be seen, along with the banjo fitting, in **Photo 1**.

The stack is a length of round brass stock, cut and filed to the right length. A small hole in the bottom of the stack will accommodate a bit of copper pipe that takes the exhaust from the exhaust outlet on the engine assembly to the stack.. On my engine, this just sits in place, held there by gravity.

Photo 2 shows all the boiler components, including the stack and exhaust pipe at the far left, the safety valve and banjo bolt below the boiler and the oiler is at the right. The bushings and mounts are silver soldered in place and the 4-40 screws for mounting the engine to the boiler and the boiler to the frame are in place.

Photo 3 shows the completed engine and boiler components assembled together. Two 4-40 screws hold the engine to the boiler. The safety valve goes in its bushing and the banjo fitting with the banjo bolt go in the steam outlet bushing. I had to file a small bit out of the back edge of the engine frame to accomodate the banjo fitting. Fibre washers are used for gaskets. One on the safety valve, two on the banjo bolt and fitting, and one on the oiler. Now, on to the chassis!



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Finger Lakes Live Steamers Spring 2003 Open House

by Roger Caiazza
photos by Marie Brown

Another club track takes shape...

The Finger Lakes Live Steamers (FLLS) have added a Gauge 1 track to their 7-1/4" and 4-3/4" gauge lines. The new permanent Gauge 1 line was officially opened in time for the Spring Open House on June 22-23, 2003. Many Gauge 1 adherents of FLLS are also members of the Upstate New York Live Steamers, so the open house was a dual event.

The Finger Lakes Live Steamers facility is located in Marengo, NY, midway between Syracuse and Rochester (www.fingerlakeslivesteamers.org). The facility was started in 1969 and has been growing ever since. There is a mile long 7-1/4" gauge track that includes a yard, passing sidings, bridges and operating signals. There also is a 1500 foot dog-bone loop of 4-3/4" gauge track with plans to expand that an additional 900 feet.

The newest addition to the club is Gauge 1. A Gauge 1 track was set up temporarily last summer but this year was the first with a permanent track. In addi-

tion, another temporary loop of track was set up for this summer. Plans are also developing for additional permanent track for the future.



Roger Caiazza prepares his Pearse Colorado for a run. The elevated section works perfectly as a steaming bay.

There are several unique aspects of this Gauge 1 layout relative to other live steam clubs. Our layout includes electrical power to broaden its appeal. It turns out that most of the members with the bigger scale steam engines also have a Gauge 1 engine or two and have

no place to run their engines. Another difference is that much of the track is on embankments rather than on elevated platforms. However, we do have a wye track on an elevated trestle that serves as a waist level steamup area. These tracks connect to Gauge 1 track on a 4-3/4" gauge turntable that enables us to turn an entire train that enters on one leg of the wye and leaves the other.





Tom Bowdler (center) steams up his Catatonk Heisler.



A view from the far end of the gauge 1 loop.



(l. to r.) Roger Caiazza, John Spencer and Dick Wyckoff enjoy a shady spot with a good view of the action



Lots of visitors flocked to the gauge 1 track to investigate the new addition to the FLLS club site.



Photo right: Midpoint view of the gauge 1 loop.

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Upstate NY Steamers Events - 2003

by Ron Brown

photos by Marie Brown unless otherwise noted

Though the Upstate NY Steamers had a full calendar of monthly events scheduled for 2003, we were knocked out of several of these by bad weather. We report here on two of the events that were blessed with excellent summer weather - Ron & Marie Brown's August steamup and Don & Marion Sauer's September steamup.

Turnout at both events was good, and we enjoyed many hours of good steaming, not to mention good eats and drinks. We'll let the photos and captions tell the rest of the story.....





Page left, clockwise from top right: Chuck Walters, Tom Bowdler, Scott Lawrence and Don Sauer take a break at Brown's to just sit and watch the trains run.

Bob Root and Dave Conroy ham it up for the camera while keeping a close eye on their doubleheader. C'mon guys...can't those two big locos haul a longer train??!!

Overview of the layout at Brown's, including the big tent to provide shade or keep off the rain. All weather steamup!

Roy Ganderton preps his loco for a run on Tom Bowdler's portable, dual gauge track.

Rob Kuhlman (*Mr. 32mm*) and Carl McGiveron watch the trains running at Brown's. Sadly, Rob was the only to take advantage of Tom's 32mm trackage.

This page, clockwise from above: Andrew Walters guides his train through a cut at Sauer's.

Matthew Labine with his beautiful Irish train. Excellent work, Matthew!

Matthias Warmbold, all the way down from Quebec, Canada with his family and his kit-built Lady Anne.

Dave Conroy looks serious as he inspects his Accucraft K-27 at Sauer's.

Tom Bowdler gives some pointers on driving live steam to Gail Albers at the Sauer's steamup.



32mm Returns to Newark Valley by Rob Kuhlman

During three days of late summer Marie and Ron Brown once again hosted a large contingent of live steamers for one of the most enjoyable east coast steamups of the year. The special hook this August, however, was Ron having applied a gentle arm twisting upon Tom Bowdler to lay a third rail to Tom's splendid exhibition railway in order to enable 32mm to participate. So this year, for the first time since the demise of the Silo Falls Railway, 32mm'ers could make steam in Newark Valley.

Tom's railway is a clever lightweight portable design made of 5mm luan ply with ribs and stiffeners; it forms an ellipse of roughly 10 feet by 20 feet and is laid with a loop of Sunset Valley dual gauge flextrack. Tom assured me that the 32mm gauge third rail had yet to see a driver, so I inaugurated service with my new BILLY, followed by my mock-War Department LADY ANNE, and finally my Cuckoo's Nest KATIE II (*see photo below*), each pulling a train of mostly scratchbuilt disreputable rolling stock. The KATIE II was making a homecoming of sorts, my having purchased this loco from Ron about 10 years ago. As I was the only attendee on Friday with any 32mm equipment, I essentially had the loop to myself, and I took advantage of the opportunity! Of course, a steamup wouldn't be quite as much fun without the good natured jibing and taunting between the advocates of 32mm (that would be me) and the broad gauge 45mm'ers, and there was plenty of that!

I drove home at the end of the day with a fragrance of steam oil on my hands and a broad smile on my face. Many thanks to Marie, Ron, and Tom.

The rumor mill has it that Ron is intending to re-deck his permanent layout, currently only broad gauge 45mm; and while the track is lifted, he'll take the opportunity to install double track, one of which is intended to be dual gauge. If so, the 32mm narrow gauge lokies and critters will soon be able to rub elbows with the Asters and K-27s. I can't wait!



Photos above, top to bottom: View of the tented steamup area at Sauer's.

Carl Berg hooks up a tank car to his One-Truck Heisler (*article and photos coming in SitG*).

John (Crash) Spencer, Mort Schoenberg and Stan Richmond service their locos while keeping an eye out for traffic.
photo by Peter Martin

Super Detailing the Accucraft Mich-Cal #2 Shay

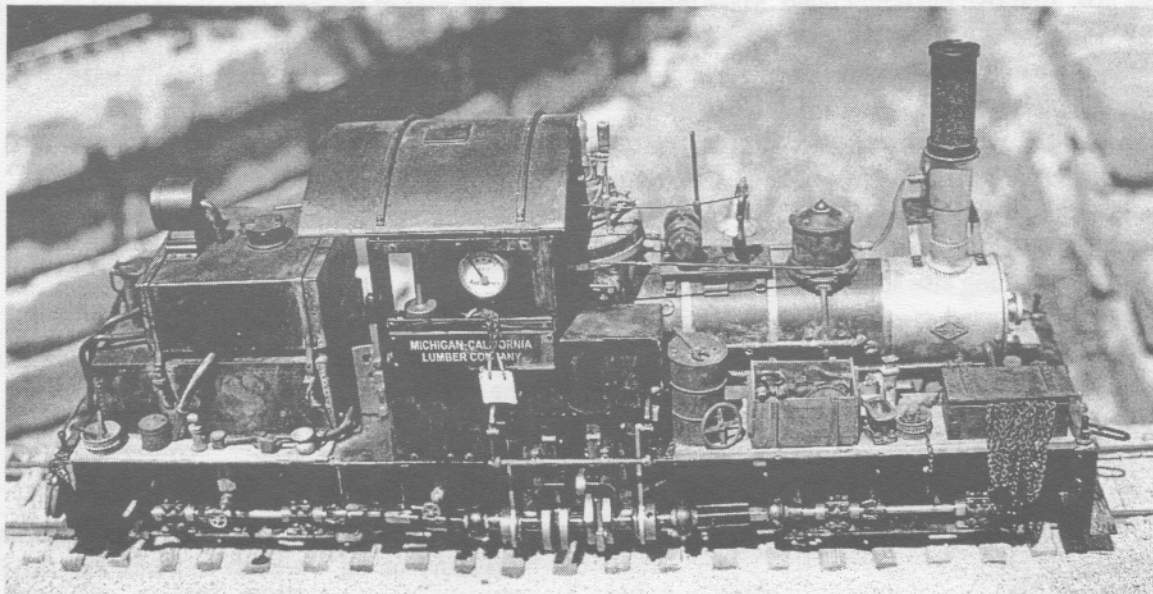
by Sonny Wizelman
photos by Ray Cadd
CAD drawing by Les Knoll

A Master Craftsman shows us how to make 'em look real

I am a big fan of geared locomotives, so when I became aware of the Accucraft Mich-Cal Shay I put in my order immediately. When it arrived I ran it on blocks to test it and break it in. Then I ran it on the track. Everything worked perfectly. The only problem for me was that it was too clean and shiny and lacked detail. No hard working Shay was ever this clean and

neric and plain look of the Shay and the need for detail parts for the loco. We agreed that this locomotive would be greatly enhanced with aftermarket detail parts.

Pete began to research drawings of the locomotive. Some of the parts were already in his product line and some had to be developed. Pete makes the



Bird's-eye view of the Author's fully detailed Shay. Looks like it just came in from the woods!

uncluttered after even one days use. I had decided that I wanted to detail and weather the locomotive...now it was a matter of deciding what to do.

I flew home from Diamondhead 2003 with Pete Thorpe of Trackage Details and we discussed the ge-

masters and then has the brass parts cast. Pete and I corresponded by phone and through the mail with drawings and photos of the parts he was developing. As the parts were finished he sent them to me.

With the drawings, Pete's parts and my imagina-

tion I began the process of transforming the locomotive. The following is a step-by-step description of that process.

Bell

Turn the bell 180 degrees. Make rope out of .025" brass rod 4" long. See drawing "A" for shape of handle. I drilled a .038" hole in the cab and put a slight curve in the rod so it would appear more like a hanging rope. Then feed it through the cab hole from the inside and attach to the bell.

Smoke Box Length

I modified the length of the silver on the smoke box. As it is, it's too long. If you measure the smoke box from the inside it will be 1.5". If you use my method the smoke box will be 1.75". This is a compromise that I accepted. The front of the support for the boiler is 1-3/8" from the front of the boiler. The rear of the support is 1.75" from the front. The correct place for the end of the silver is in the center of the support. I saw no way of getting the boiler band reattached since the support would be in the way, so I compromised and used the rear of the support as the end of the smoke box. Remove the boiler band. Mask the silver at 1.75" and sand the silver that is exposed. I sanded slightly into the black to eliminate the line where the two colors butt. Use a fine sand paper. Clean up the area to be painted with paint thinner. Remove any grease or sanding particles. Mask the boiler just in front of the sand dome. There will be about .75" exposed for painting between the boiler support and the sand dome. Cover everything else so that no overspray will get on the engine. I used masking tape and a plastic garbage bag.

I sprayed the boiler with Plastikote Engine Enamel Fast Dry Universal Black No. 203. Resists heat to 500 degrees. (Pep Boys \$3.99). Then reattach the boiler band.

Sand Dome

Clevis: See drawing "A". Unscrew dome from boiler. Make part "A" from .015" brass sheet. The 18mm I.D. will fit over the stem of the dome that goes into the collar. The 22mm O.D. will be flush with the outside edge of the dome. Make rod from .046" brass rod. Drill a hole for .046" rod in the clevis as per the drawing. Bend handle as per the drawing. The rod goes

on the driver's side of the engine. Blacken the brass. Feed the rod in from the inside of the cab between the boiler and the cab front wall. Attach to clevis. If you prefer, you can drill a hole in front wall of the cab for the rod.

Sand Tubes: Use Trackside Detail TD 94 Sander Valves. Drill dome collar on opposite sides at the thickest part of the collar to accommodate the valves. Attach the valves with the nuts facing out. I used 3 B Weld. Make 2 pipes from .095" brass tubes. I heated them with a butane torch first so they would be easier to bend. Use the boiler circumference to bend the tubes. The top of the tube will attach to the valve with JB Weld. Do not blacken the tubes until you have soldered them to the Injector Valve Piping.

I made brackets to hold the tubes just below the deck. Approximately 1" behind the front support of the boiler there is a support bracket under the deck. I attached the brackets for the tubes to this bracket, facing to the rear, just inside the inner ends of the deck using JB Weld. See "B".

The drawing shows the tube coming down to a point just above the track on the front side of the rear wheel. I had to compromise on this position as this interfered with the swivel of the truck. I ran the tubes to the rear of the rear wheels and cut them above the wheels.

Available from: Trackside Details
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Smoke Box Ash Clean Out

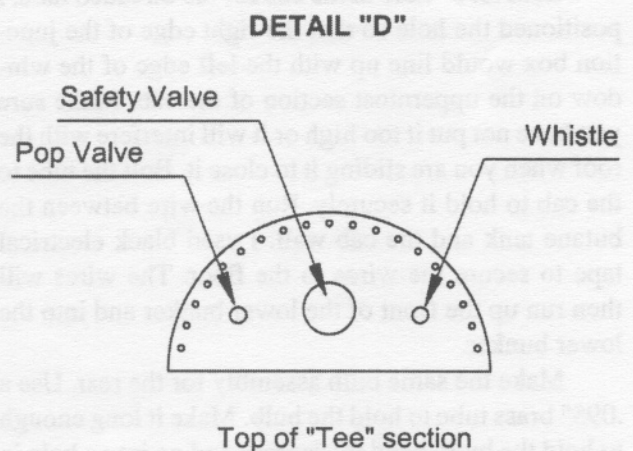
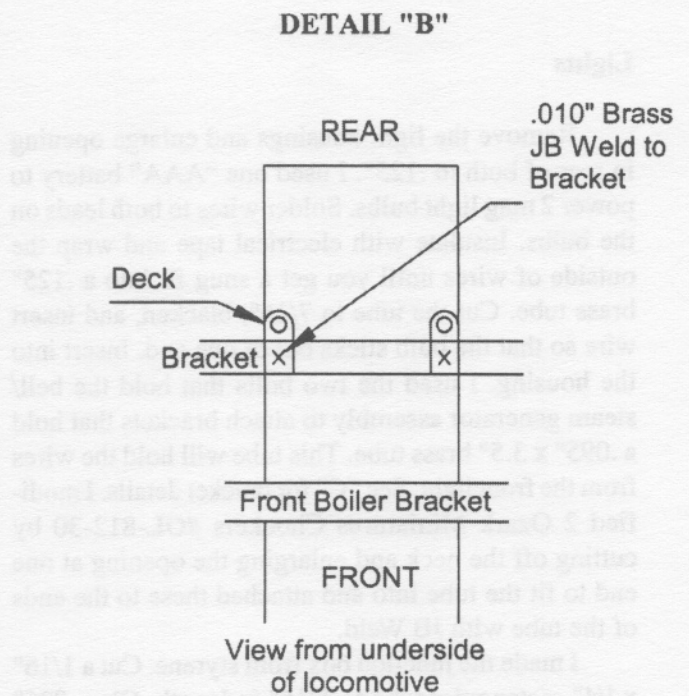
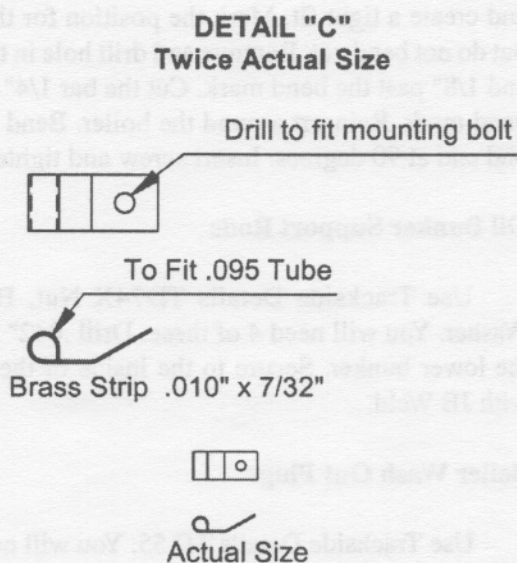
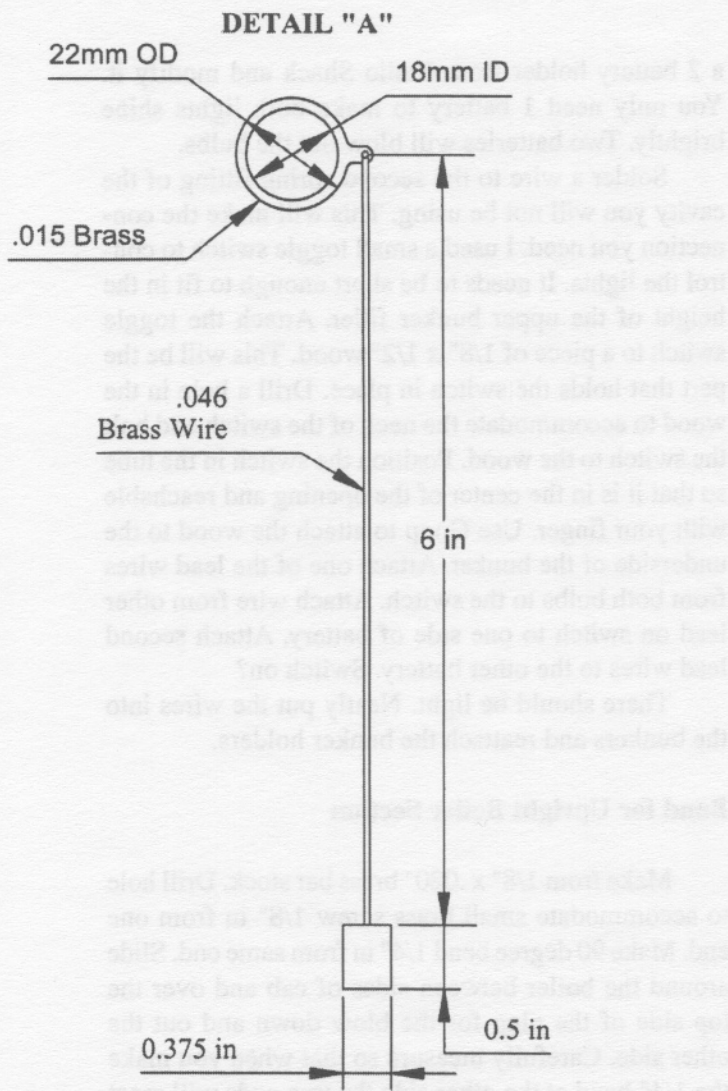
Use Trackside Detail TD 56. Blacken. Drill a .065" hole in the smoke box and JB Weld to attach to the smoke box.

Trucks

I changed the 4 Phillips head screws on each gear assembly on all 4 wheels to black hex head screws. This was suggested by Jon Toumanian.

Vertical Boiler

There are 2 silver Phillips head screws just under the deck on each side of the boiler that secure the boiler to the frame. These can be painted black. I changed them to blackened brass slotted screws.



CAD drawings by Les Knoll

The drawings are full size so readers can copy the drawings onto label paper and past them onto brass sheet.

Lights

Remove the light housings and enlarge opening in rear of both to .125". I used one "AAA" battery to power 2 mag light bulbs. Solder wires to both leads on the bulbs. Insulate with electrical tape and wrap the outside of wires until you get a snug fit into a .125" brass tube. Cut the tube to 7/16", blacken, and insert wire so that the bulb sticks out of one end. Insert into the housing. I used the two bolts that hold the bell/steam generator assembly to attach brackets that hold a .095" x 3.5" brass tube. This tube will hold the wires from the front light. See "C" for bracket details. I modified 2 Ozark Miniatures Chockers #OL-812-30 by cutting off the neck and enlarging the opening at one end to fit the tube into and attached these to the ends of the tube with JB Weld.

I made the junction box from styrene. Cut a 1/16" x 1/4" rectangular tube to 5/16" in length. Glue .025" sheet styrene to top and bottom and trim flush. Make face plate from .025" sheet styrene. Overhang the face plate by 1/64" on all 4 sides. I used Ozark Miniatures OM-07 1/2" bolt with nut to "secure" face plate to box. Drill 3/32" holes in the bottom and the lower back of the box. This will be the place the wires enter and exit the box. Tap a thread onto a 1/4" x .095" brass tube. Glue this into the hole in the back of the box. Paint the box black. Thread the wire through the hole in the bottom and the out through the threaded tube in the back.

Drill .095" hole in the cab for the threaded tube. I positioned the hole so that the right edge of the junction box would line up with the left edge of the window on the uppermost section of the cab. Make sure you have not put it too high or it will interfere with the roof when you are sliding it to close it. Bolt the tube to the cab to hold it securely. Run the wire between the butane tank and the cab wall. I used black electrical tape to secure the wires to the floor. The wires will then run up the front of the lower bunker and into the lower bunker.

Make the same bulb assembly for the rear. Use a .095" brass tube to hold the bulb. Make it long enough to hold the bulb, bend 90 degrees and go into a hole in the top of the bunker and extend into the bunker approximately 1/4". Drill .095" hole in the top of the bunker, behind the light for the tube. Blacken the tube, insert the bulb and fit into housing and hole in bunker. Secure the tube inside the bunker with Goop.

If you can find a single "AAA" battery holder, that is all you need. These are rare. If not you can use

a 2 battery holder from Radio Shack and modify it. You only need 1 battery to make both lights shine brightly. Two batteries will blow out the bulbs.

Solder a wire to the second spring fitting of the cavity you will not be using. This will make the connection you need. I used a small toggle switch to control the lights. It needs to be short enough to fit in the height of the upper bunker filler. Attach the toggle switch to a piece of 1/8" x 1/2" wood. This will be the part that holds the switch in place. Drill a hole in the wood to accommodate the neck of the switch and bolt the switch to the wood. Position the switch in the tube so that it is in the center of the opening and reachable with your finger. Use Goop to attach the wood to the underside of the bunker. Attach one of the lead wires from both bulbs to the switch. Attach wire from other lead on switch to one side of battery. Attach second lead wires to the other battery. Switch on?

There should be light. Neatly put the wires into the bunkers and reattach the bunker holders.

Band for Upright Boiler Section

Make from 1/8" x .020" brass bar stock. Drill hole to accommodate small brass screw 1/8" in from one end. Make 90 degree bend 1/4" in from same end. Slide around the boiler between sides of cab and over the top side of the plug for the blow down and out the other side. Carefully measure so that when you make the 1/4" bend at the other side the two ends will meet and create a tight fit. Mark the position for the bend, but do not bend yet. Remove and drill hole in the other end 1/8" past the bend mark. Cut the bar 1/4" past the bend mark. Reinsert around the boiler. Bend the second end at 90 degrees. Insert screw and tighten.

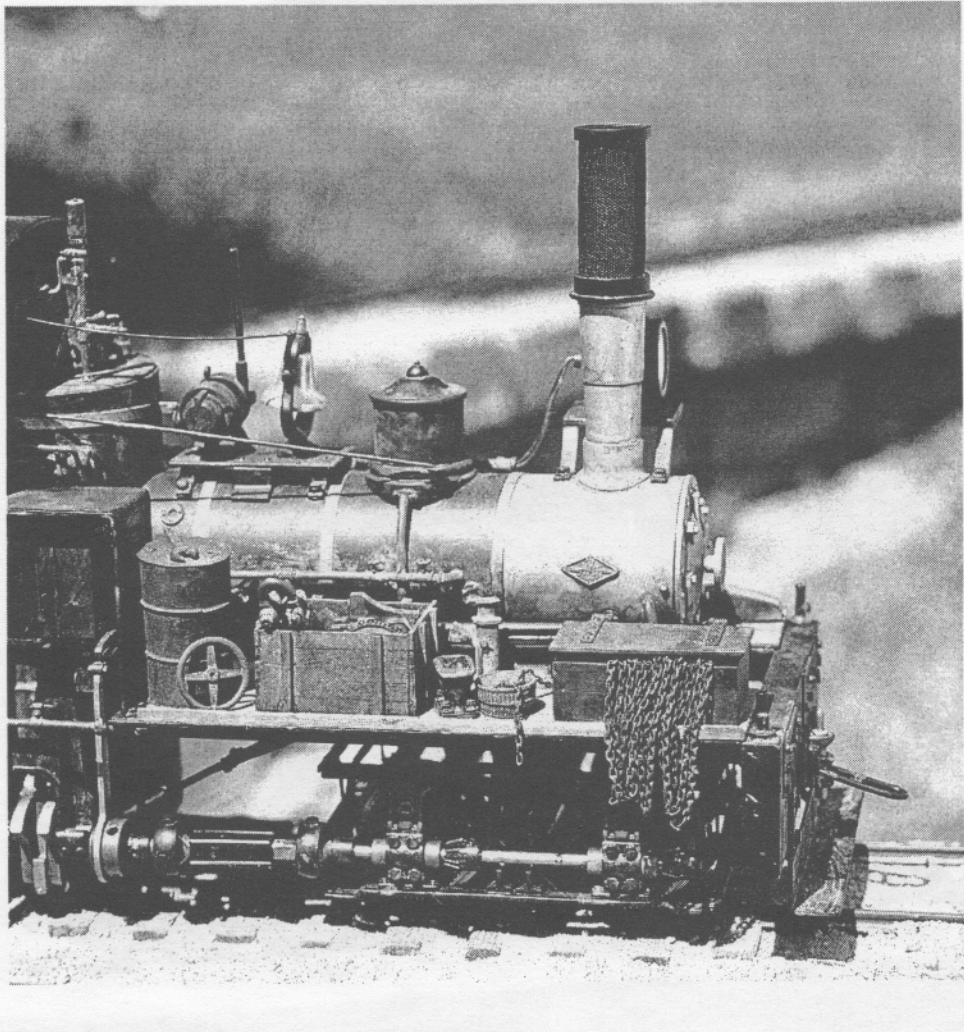
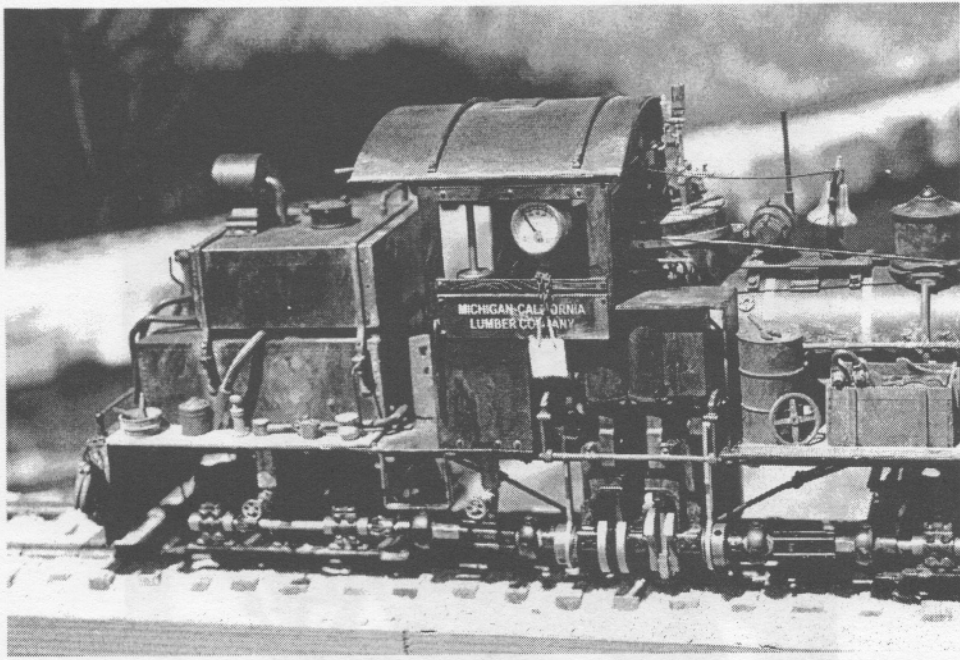
Oil Bunker Support Rods

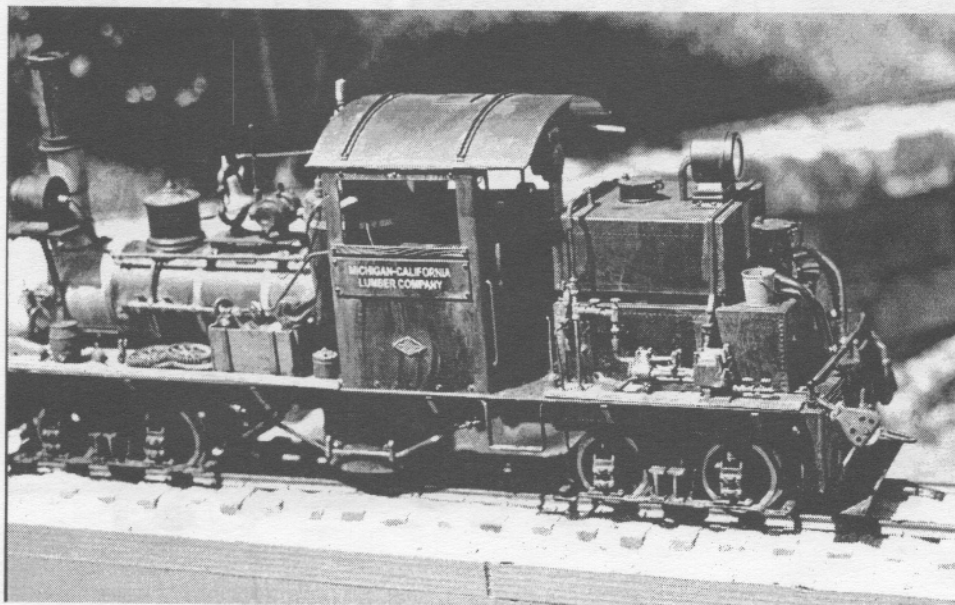
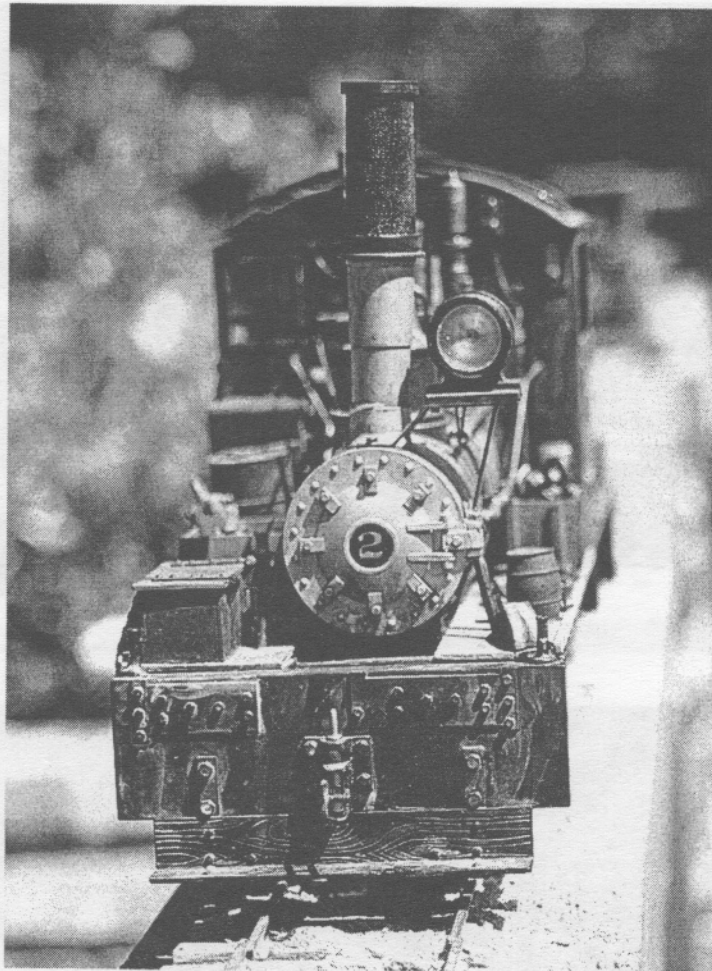
Use Trackside Details TD74X Nut, Bolt and Washer. You will need 4 of these. Drill .042" holes in the lower bunker. Secure to the inside of the bunker with JB Weld.

Boiler Wash Out Plugs

Use Trackside Details TD 55. You will need 4 of them. Grind off the back so only the face of plug is left. Blacken. Attach 1 to lower front and 1 to upper rear of boiler on each side. Attach with JB weld.

Dry Pipe





Use Trackage Details Dry Pipe. This is a new part that only comes with the special Trackage Detail Mich-Cal Shay Kit. File the rear end to match the angle it will have when it meets the cab wall with the front end up against the boiler. Drill .0625" hole into the rear end and JB Weld a .0625" x 1/2" brass rod into the hole. Drill .0625" hole into the front wall of the cab where the rod intersects with the front against the boiler. Blacken and JB Weld to the boiler. JB Weld the rod from the inside of the cab.

Injector Valves

Use Trackage Details Injector Valve Piping. These are also new parts from the Shay kit. Drill into the rear ends of both valves with .0625" drill just far enough to fit a .0625" brass rod into this opening. Solder .0625" rods to both. Bend the fireman's side up at 45 degrees and the back to parallel so that the valves are positioned in the center of the height of the boiler, and so that the rod will enter the cab front wall 1" below the window. On the driver's side the procedure is the same except the rod will go between the cylinder cover and the boiler, and then bend outward to clear the dry pipe. It will enter the cab 1/4" below the window, just above the dry pipe.

Drill .0625" holes in the cab front wall. JB Weld the front end to the boiler and the rod to the inside of the cab. Solder the valve to the sanding pipes where they intersect. You can blacken it now, after you have done the soldering.

Wooden Decking

Use 3/8" x 1/4" basswood for the decking and 1/8" x 1/16" for the edging on the front left and right decking. The edging is there so "things" do not slide off the decking. Precut the sections to length first. Glue as many pieces together as possible first and trim at the boiler or bunker so full size planks are on the outside and any narrow sections are on the inside. Do not glue the pieces that go behind the supports for the lights or the boiler since you will need these as separate pieces to fit around these supports. Press the sections against the metal deck so that the hex head screws make an impression in the wood. Drill these out so the deck will fit snugly over the screw heads against the metal deck. You will need to fit around the supports. If you are using the blowdown, you will need a hole for it as well. There is an additional section of decking under the oil pump.

I put grain in the wood with a razor saw. Draw the teeth over the length of the wood until you get the desired look. Stain with Age It Easy from Micromark or you can use a mixture of about 30 parts rubbing alcohol to 2 parts India ink. Lightly sand to remove any fuzz from graining and to lighten the stain. Glue to the deck with JB Weld.

Detail Parts

Ozark Miniatures OM-25 Water Barrel with Spigot
OM-79 Water Pail
OM-65 Half Bushel Basket
OM-63 Gears
OM-26 Small Jack
OM-28 Spittoon
OM-22 Tallow Pot
OM-57-3 Shop Crane Hook
OM-1 6-SB Black Brass Chain
OM-812-12 12' Logging Blocks
OM-812-16 16' Logging Blocks

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541-582-4104

Big Train Back Shop BTB-512 Gas Can
24-510 Oil Drum

From: Big Train Back Shop
PO Box 991
San Luis Obispo, CA 93406
805-541-0546

Trackage Details TD-Mich-Cal #2 Shay Kit
TD-4 Rerail Frog
TD-2x Engineers Oil Cans
TD-6 Engine Tool Set
TD-39 Tool Box
TD- 3 Water Bag
TD-182 Auxiliary Steam Pump
TD-53x Pipe Details

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Sierra Rust, Grime and Soot

Available From: Sierra Scale Models
7628 Jill Court
North Richland Hills, TX 76180
www.sierrascalemodels.com

Cover for Vertical Boiler Section

See Drawing "D". Cut .020" brass sheet to this pattern. The cover will extend about 1/8" under cab front. Remove safety. Make hole to fit over safety plug on top of boiler. Use a center punch to simulate rivets along the front edge. Solder Trackside Details TD-43 Pop Valve to cover in position shown. Solder Trackside Details TD-8x Steam Whistle to the Whistle Standpipe. The Standpipe is a new part, so the number is not available. Make the whistle support from 1/8" x .032" brass bar stock. Solder the whistle with the extension to the cover. J B Weld the support to the extension and the cover. Blacken. Attach to top of boiler with J B Weld. Replace the safety. Make a rope pull for the whistle from .025" brass rod. Form handle as per drawing "A". Drill a .038" hole in front wall of cab. Run the rod through the hole from the inside of the cab and connect to the whistle.

Bunker Hand Rails

Bend .046" brass rod in a circle with an ID to fit on the threaded section of the bracket that holds the top oil bunker to the lower bunker. Make an 80 degree

bend down 1/4" from the OD of the circle. Drill a hole through wood and metal deck 15/32" out from the bunker. Blacken. Remove bolt from bracket. Feed the end through the hole in the deck and place the circle on the threaded section of the bracket. Secure with the nut. Trim the part under the deck to about 1/4".

Auxiliary Steam Pump and Plumbing

Use Trackside Details Auxiliary Steam Pump TD-182. Assemble pump as per the illustration included with the pump. I used J B Weld to glue the parts together. Use Trackside Details Globes TD 115. You will need two sets. I used .0625" brass rod for the pipes. Drill .060" hole completely through the parts where the pipe passes straight through. Drill .060" hole about 1/8" into those junctions which the pipes do not pass through. Cut the .0625" brass rod to the appropriate lengths. Use a #80 die to thread the opening in the Globes and Elbows where needed and a #80 die to thread the rod. The three elbows were machined for me by Paul Gamlin of Redwood City, Ca. These were also tapped. Also drill and tap the pump. Drill a .0625" hole through the wood and metal deck where the vertical pipe intersects the deck. Drill a .0625" hole in the top bunker where the pipe enters the bunker. Thread the vertical pipe to a point just above the deck.

Assemble all the parts except where the horizontal pipe intersects the 3-way fitting on long vertical pipe. This will allow you to disassemble the plumbing to get the bunkers apart when you need to service the battery. You will need to raise the pump so that the rear facing plumbing clears the deck. Glue 1/16" x 3/16" x 5/8" onto the pump feet. Blacken all the parts. Screw on a nut to the top of the threads and put a washer under the nut on the vertical pipe at the bottom. Insert the vertical pipe into the hole in the deck and the upper pipe into the bunker. Secure this pipe with a nut under the deck. Now assemble the rest of the plumbing and glue the pump to the deck. Where I screwed the pipes in I used ACC to secure. Where the pipes are drilled through I also used ACC to secure.

Truck Retainers

Make 2 pieces of wood 3/8" thick x 3/4" high x 1/2" wide. Attach to the inside of the front and rear buffers. Position them so that the truck will stop swiveling at a point that is just prior to the linkage disengaging. Attach with Goop. This was suggested by Larry Bangham.

Builder Plates

Use Robert Dustin Decals and Plates # B/L3. You will need two. On the one that attaches to the smoke box you will need to bend to match the circumference of the boiler. The other one can remain flat. Attach with J B Weld.

Robert Dustin Catalog 11 for G Scale
P0 Box 77
Thompson, CT 06277
860-923-0174

Hose Holder

Use Trackside Details Hose Holder. This is another new part from the Mich-Cal #2 Shay Kit. There are two prongs that protrude from the back. Measure the distance between the two prongs and drill two holes that correspond to the prongs in the rear of the lower bunker filler tube. Blacken. J B Weld to filler tube. The hose was made for me by Ray Cadd.

Valve Tumbler Bar

Use Trackside Details Valve Tumbler Bar. This is another new part from the Mich-Cal kit. Remove the two links. Solder the links to the back of the upright arms of the tumble bar. The bar fits under the deck and will be secured with bolts. First check the placement, (note: leave a gap of .010" between the bar and the cylinders so heat will not travel into the bar) and mark the position for the holes that will be needed. Check fit and drill .0465" holes. Blacken. Use two #80 x 1/4" brass bolts to hold the bar in place under the deck. The front hole is just in front of the cylinder cover. The rear hole is in the cab.

Steam Whistle

The whistle was made for me by Larry Bangham. It includes the whistle, a banjo fitting, a banjo bolt and a smaller Accucraft safety (part No. 21103). Larry also made the collar that covers the banjo fitting and the banjo bolt. I blackened the safety and the collar. In addition, the whistle has a resonator mounted inside the front of the cab, an activation lever mounted at the top rear of the cab and the steam lines connecting the banjo fitting to the lever and the lever to the whistle.

Larry Bangham

All the Bells and Whistles
15058 Tricia Lane
La Mirada, Ca. 90638

714-521-6254

lbangham@juno.com

Globe Valves for the Blow Down and Oil Drain

The Globe Valves are 1/8" Globe Valves from Coles Power Models. This was an idea shown to me by Thaine Morris. Remove the two collars and unscrew the Accucraft valves. Thread one end of the globe valves to the thread in the collars. Screw in the globes and solder to the collar. Blacken the valves. To attach the collars with the valves in them you will have to remove the rear truck, the linkage and the collar that is attached to the drive shaft. Also remove the rear screw from the cab step so it can swing clear of the valve.

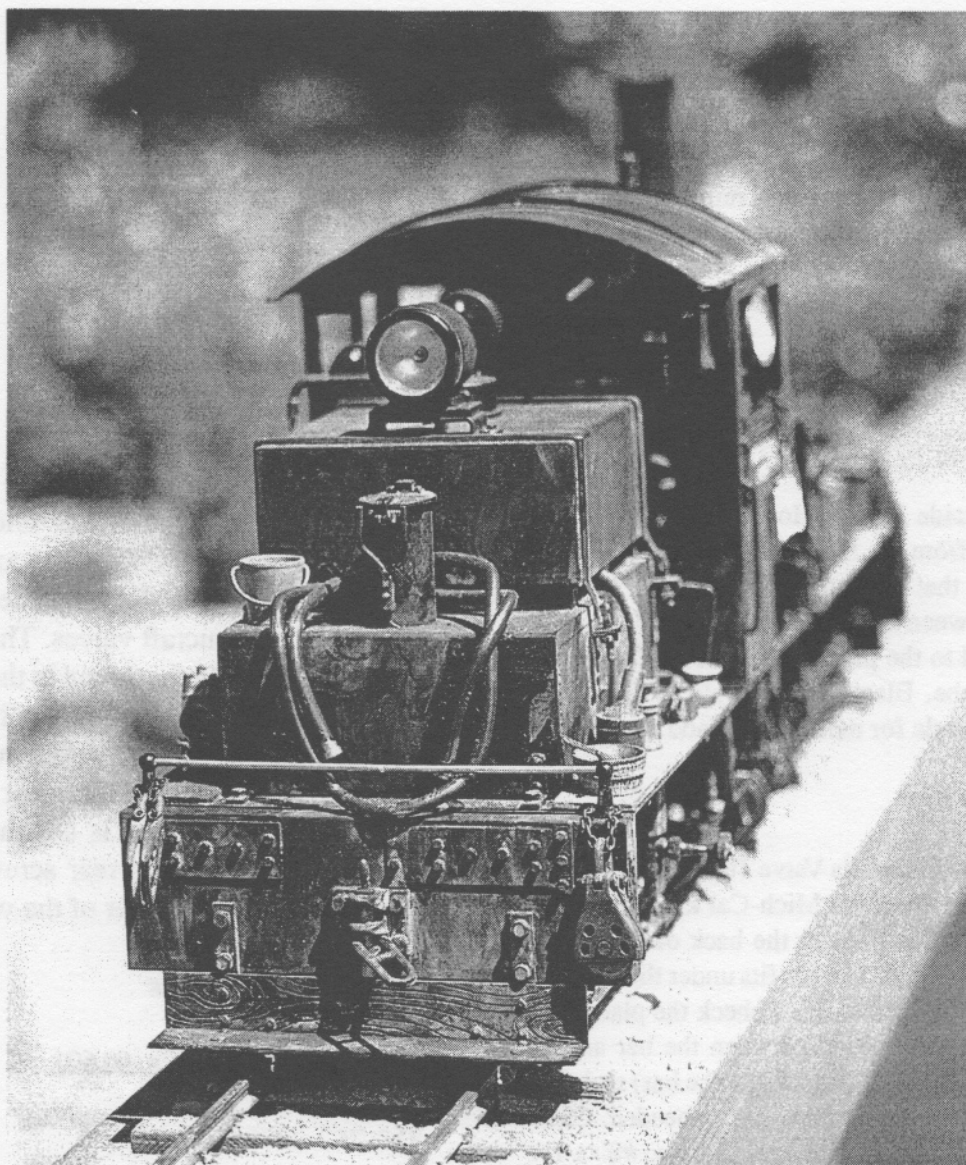
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Weathering

First dull the paint finish with Scalecoat Paint S51 Flat Glaze. Then use Sierra Soot and brush on where ever you think water may have leaked or accumulate and left a mineral residue. The liquid will give you a light coating while the material that has settled in the bottom of the bottle will give you a heavier coating. Then do the same process with the Rust where you think rust may have been. Then apply the Grime. When applying the Grime just use the liquid part. When you use the settled material in the Grime you will get a really black area that is too dark and heavy. Next, make a mixture of 1 part India ink and about 30 parts rubbing alcohol, brush this over everything. Don't apply this evenly. This will tone down the colors and leave a misty dull finish overall. You may need to add a few more drops of ink to the mix to get it dark enough to



cover. I suggest you try this out on a scrap piece before you do it on your locomotive. This takes a little practice, so experiment first. Keep going until you are satisfied with the appearance. I go for the "used and abused" look. As you run the engine, oil and oily water will get on it. The dirtier it gets, the better it will look.

Adding the Detail Parts

I try placing the detail parts in several different positions until I get the "right" look. View the placements from various angles. Don't put anything in front of the smoke box door that would prevent you from opening it to light the loco. I am trying to achieve "organized clutter". When you are satisfied with the layout, ACC the parts to the deck.

That's it. I hope you like your engine and that

this was helpful. I want to thank Pete Thorp for his inspiration, encouragement and all these wonderful detail castings. If you have any questions or comments please contact me.

Sonny Wizelman
10321 Northvale Road
Los Angeles, CA 90064
310-558-4872
saul-w@socalgraph.com



A Self-Contained Working Headlight

by Charles T. McCullough

Light 'em up!

A friend of mine bought a Ruby Locomotive and was bemoaning that it did not come with a headlight. I had issue N° 63 of *SitG* that showed a few items that could be made for the Ruby, one of which was a headlight. So I made him a headlight, but not being able to leave well enough alone, I had to try to make it a working headlight.

I drilled a hole in the center that a very small LED would fit into and cross-drilled a small hole to fit a very small diameter copper pipe and then snaked the smallest diameter insulated wire I could find into the pipe. I connected the wire to one side of the LED and the other side of the LED was connected to the headlight housing. I gave it all to my friend and left him to figure out where to put some batteries on the locomotive, how to bend the pipe to make it fit somewhere and where to drill holes to mount it all. He is still trying to figure it all out.

So, I began to consider how it all could be done as a complete kit. I thought about putting the battery in a simulated air tank and disguising the wires to the headlight in a maze of other conduits and air pipes. But, it would sure be nice if it could all be self-contained; battery, switch and lamp all in one object that looked like a locomotive headlight. Then there wouldn't be so many items to try to figure out where and how to mount.

But...how small could one be? The battery would probably limit how small the headlight could be, but... how much power can be obtained from a small button or coin battery? I was also concerned because the small batteries are expensive and, if they did not last long then I would not want to have the headlight turned on much.

I happened to have just purchased a new ultra-bright LED pocket flashlight (Stylus Streamlight brand). It uses three AAAA batteries (yes, quadruple A). These LEDs are supposed to be a white light, as I

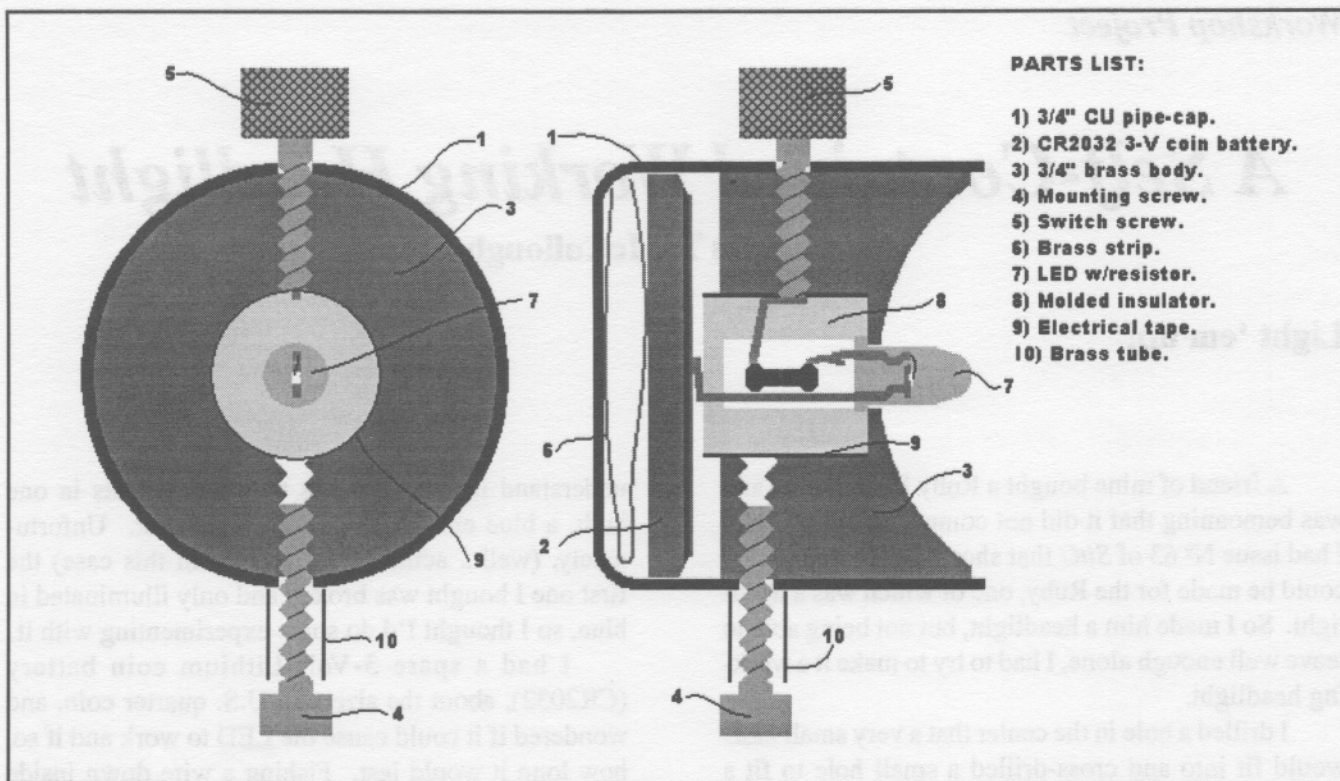
understand it; the LED has two components in one bulb, a blue emitter and a yellow emitter. Unfortunately, (well... actually, fortunately in this case) the first one I bought was broken and only illuminated in blue, so I thought I'd do some experimenting with it.

I had a spare 3-Volt Lithium coin battery (CR2032), about the size of a U.S. quarter coin, and wondered if it could cause the LED to work and if so, how long it would last. Fishing a wire down inside the barrel of the flashlight and attaching a tiny coin cell was very difficult, so, since the flashlight was, in a fashion, broke anyway, and since I was unable to remove the bulb from the flashlight by pushing it out (in either direction), I chucked the flashlight in my lathe and slowly nibbled and shaved away the last half inch of the body of the flashlight, until the LED and a small cup-shaped holder fell free.

The holder is a small hard plastic item with a tiny hole in the bottom and a slot cut about 1/4 of the way down the side. The rim of the cup has a shoulder into which the bottom of the LED fits. The cup provides a place for the current limiting resistor. I have since found this resistor is not really needed in my design since I am not supplying the 4.5-Volts that the flashlight did; I am supplying only 3-Volts.

One lead of the LED is soldered to the resistor and the other resistor lead passes through the hole in the cup and is bent to lay flat on the bottom. The other lead of the LED is fitted in the slot in the side of the cup and bent to lie along the side. When pressed into the flashlight, the lead on the side of the cup is held against the body of the flashlight. The positive end of the battery set presses against the resistor lead on the bottom of the cup. The power switch, a spring-loaded button on the end of the flashlight, connects the negative end of the batteries to the body of the flashlight.

When I assembled my headlight the first time I found that the polarity of a Lithium coin cell is the



opposite to the way other batteries are... the positive end of the 3-Volt Lithium coin cell is the case, so I had to insulate the cell body from the pipe-cap with a thin strip of electrical tape around the circumference of the battery. I have since re-wired the LED and resistor as shown in the accompanying drawings. I had to cut the slot a bit further down the side of the cup. If you build a headlight like this, but don't reverse the LED connections you will have to wrap a very narrow strip of electrical tape around the battery and insert it the other way round. If you decide to re-wire it, be careful... the leads will break if you attempt to bend them too many times (like more than once!).

To build a totally self-contained headlight, you need a 3/4" diameter copper pipe-cap (1) from the hardware store for the shell. I chucked one in my lathe and trued up the open end and ran a boring bar in the inside to clean up the inside surface so the body/reflector (3) will slide in and out easily.

The body/reflector (3) is made from a piece of 3/4" diameter brass rod. I first faced off one end and center drilled it and then bored a 0.19" diameter axial hole all the way through, (a diameter slightly larger than the LED body (7), but not so large that the base of the LED would fall through). I then dished the end approximately 0.2" deep in a rough parabolic shape. The actual shape is not very important because most of the LED's light is out the rounded end and very

little is out the sides that would need to be reflected forward.

I then cut off about 0.6" of that end of the rod, mounted that in the lathe, and faced the cut end down until the body was 0.53" long. In the end opposite the dished end, I opened up the hole to 0.33" in diameter about 0.28" deep. This leaves a shoulder about 0.05" thick to keep the LED from falling out. The diameter of this hole is slightly larger than the diameter of the cup (8) from the flashlight. This is necessary so that a layer of electrical tape (9) can be placed around the cup to insulate the lead that is on the side of the cup from the brass body (3). The tape will get punctured by the end of the Switch screw (5) to make the electrical connection to turn the lamp on. The length of the cup is such that it sticks out the end of the body/reflector by about a tenth of an inch.

I then bent a 0.25" wide, 1.25" long, 0.15" thick brass strip (6) into a bit of a curve, then folded it in half to produce something to act as a compressible spring about 0.09" thick.

Drilling the Switch- (5) and Mounting- (4) screw holes was a difficult thing for me to do. These holes need to be radial to the body and exactly on opposite sides of each other (but do not need to be aligned with each other along the length). In addition, they must be wholly in the body (3) of the headlight and not penetrate into the reflector surface. On mine, the Switch

screw (5) is 0.43" from the open end of the pipe cap and the Mounting screw (4) is 0.49 inches.

After marking the pipe-cap (1) for the locations of these holes I assembled all the parts so far: putting the LED/resistor (7) in the cup (8), wrapping a narrow strip of electrical tape (9) around the cup and inserting it into the body (3), then putting the spring (6) and the battery (2) into the pipe-cap (1) and putting the body assembly in on top of them. I then put another short piece of hollow rod in the open end of the pipe-cap and put that whole assembly into a C-clamp such that tightening the clamp would press the body assembly against the battery and spring to slightly compress the spring. Don't over compress this! The idea is to get it tight enough to hold the battery firmly between the spring and the LED lead on the bottom of the cup to maintain electrical contact. I drilled holes for 4-40 screws, (but most any of the small sizes would work as well). Do not drill these holes deep in this configuration. Just drill deep enough to penetrate the pipe-cap (1) wall and to mark the brass body (3) inside. Then disassemble the headlight and finish drilling the holes in the body (3) without the cup (8) inside so it is not damaged when the drill penetrates into the center. Then tap the holes in the body for the thread size of the screws you are using and enlarge the holes in the pipe-cap so the threads do not engage with it.

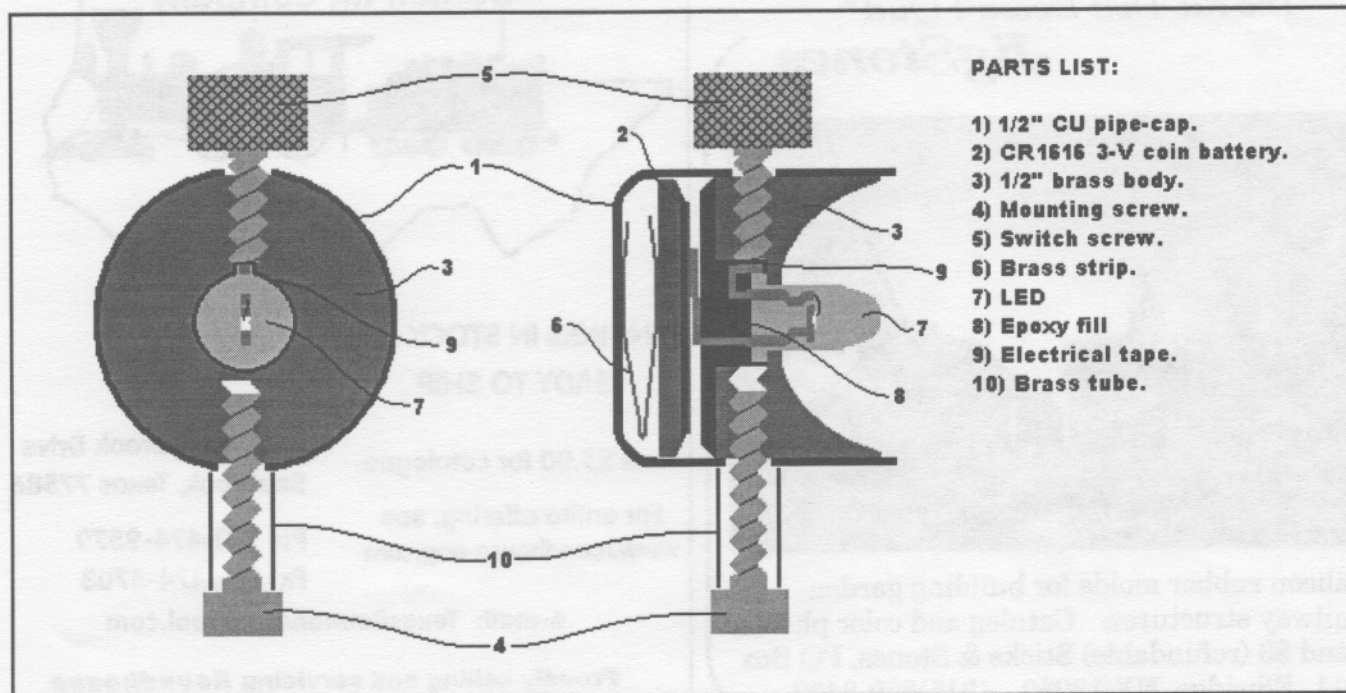
To make the Switch screw, I started with a length of 3/8" brass rod. I turned one end down to a size necessary to thread a 4-40 machine screw of about a half inch length. I then knurled the larger diameter for

about a quarter inch and cut it off. I wanted the head to be larger and easier to turn by my fingers, but any machine type or cap screw would also work. The length of the Switch screw needs to be long enough to penetrate the electrical tape before the head bottoms out against the side of the pipe-cap.

A brass tube (10) or any suitable standoff can be used when mounting the headlight on the locomotive. The length of the Mounting screw needs to be adjusted as necessary to be long enough to engage several threads in the body before it tightens against the mounting surfaces, but should not contact the cup inside.

When assembling the headlight for use, be sure the lead on the side of the cup is aligned with the hole for the Switch screw.

When I designed this headlight I was concerned that the battery would not last very long. To my very pleasant surprise I found that even though they produce a bright light, (easily visible in daylight,) the new LEDs use very little power. So little, in fact, that the battery lasts a LONG, LONG time. For example, I turned my first one on and didn't turn it off (except for a few seconds every day or two just to prove to myself that it really was still shining and not my imagination) for FIVE WEEKS. Granted, the last week it wasn't nearly as bright as the first week, but it was definitely still producing light (visible in room light but no longer visible in bright daylight). I replaced that battery and have been using the light as a night-light for the last 4 months (6 to 8 hours per night) and it is still bright enough to have to aim it away from my face so I can



go to sleep. It is now about half the original brightness but is still quite visible in daylight.

This headlight, using the 3/4" copper pipe-cap, should look nice on a 1:20.3 or larger scale locomotive.

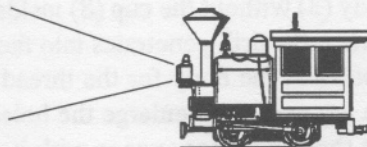
I have since found a smaller 3-Volt Lithium coin cell, (CR1616) that is about the size of a U.S. dime coin. It will fit in a 1/2" copper pipe-cap! I bought a Radio Shack 5mm 3.6-Volt 20mA 1100mcd White LED (P/N 276-320) and a Radio Shack Lithium battery CR1616 (P/N 23-168) and just poked the LED leads through the thin edge of the plastic bubble pack of the battery package such that the leads clamp over the ends of the battery. I had to be sure the leads didn't cross and short out the battery and I had to try twice to guess which lead is which polarity (no damage is done if the LED is hooked up backwards... it just doesn't light up). This CR1616 battery does not last nearly as long as the CR2032... It lasted about a day shy of two continuous weeks! Yes, you read right... two weeks. This size should work well on a 1:29 (or larger) scale.

I have included a drawing of a design for the smaller size. In this one, there is no cup and I did not use the resistor. The LED positive lead is bent over and around the base of the LED and cut off just before the edge of the shoulder on the LED base. The electrical tape is wrapped not quite twice around the LED base. Start at the bent over lead on the side and wrap away from it all the way around, over the lead and around again just up to the lead. This leaves only one

layer over the lead, which insulates it from the body, and yet is easily penetrated by the Switch screw tip, and two layers everywhere else to help hold the led centered in the body. I epoxied the LED into place and at the same time coated the back of the body with the epoxy. I let the epoxy harden before I bent the second LED wire over to form the contact that touches the top of the battery. The epoxy helps to hold the LED in place and insulates the battery from the body. It also helps to keep the Switch screw from crushing the LED.

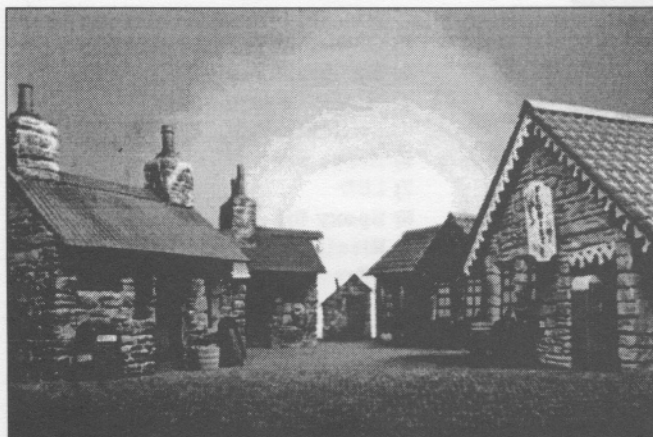
I have now found an even smaller battery (CR1220) and will be trying to find a pipe cap of a size that will work with a 1:32 scale loco.

Semper Vaporo,
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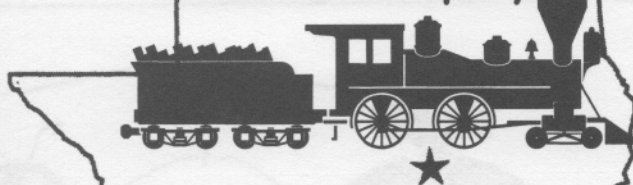
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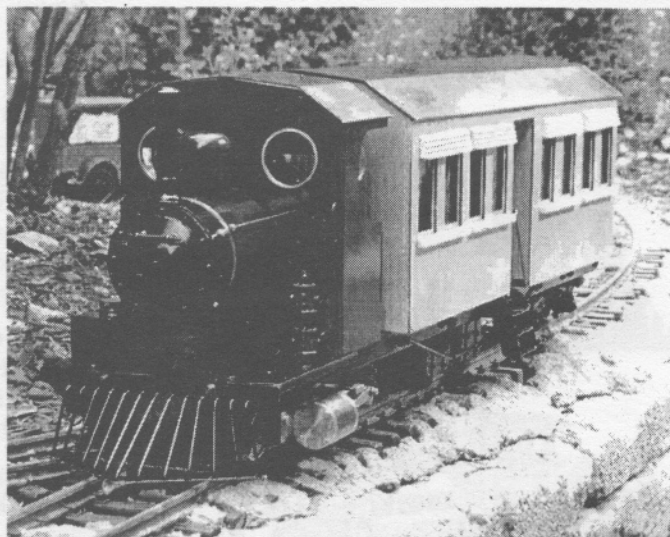
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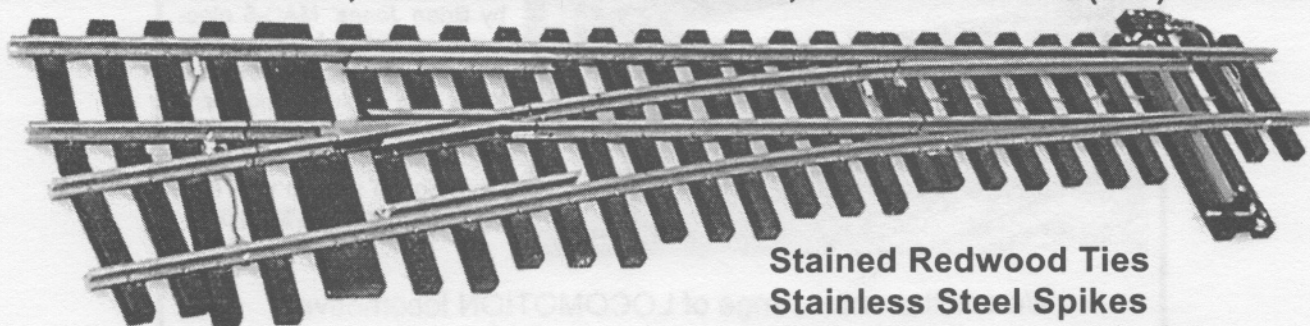
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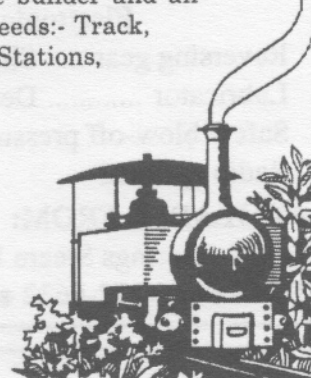
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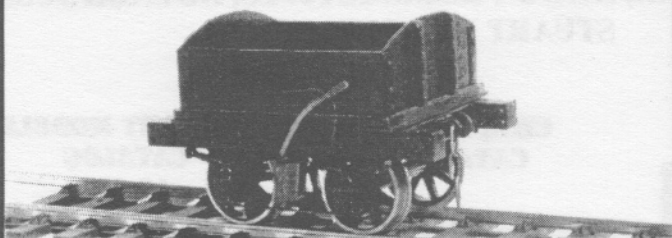
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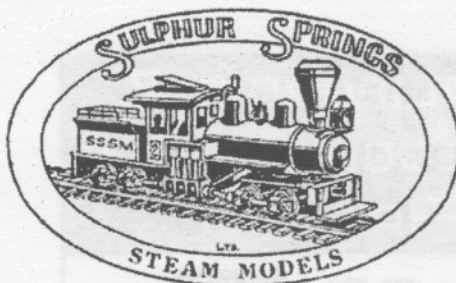
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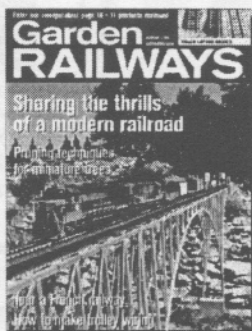


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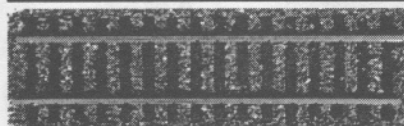
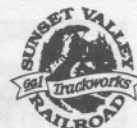
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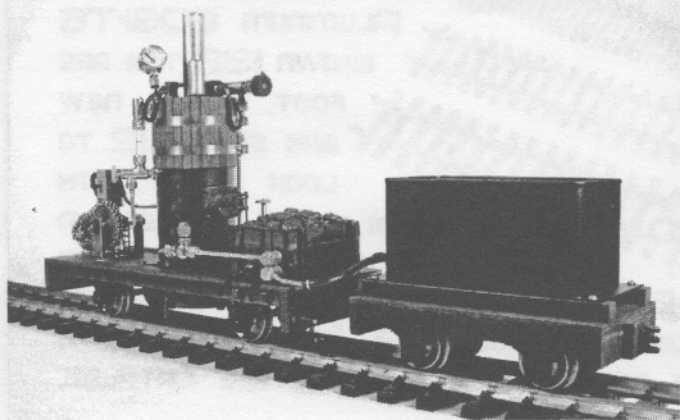


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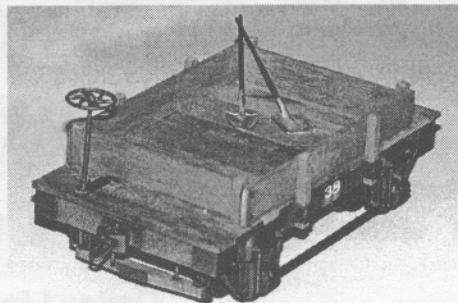
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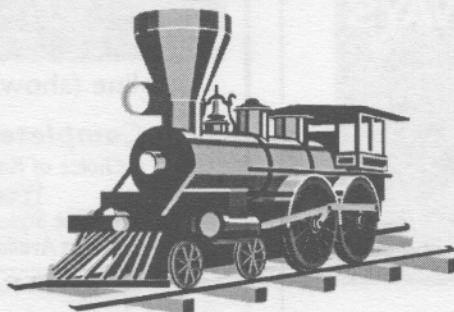
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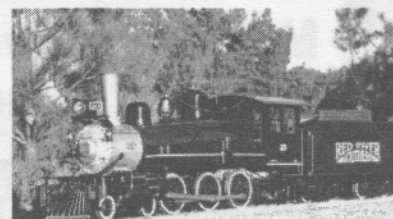


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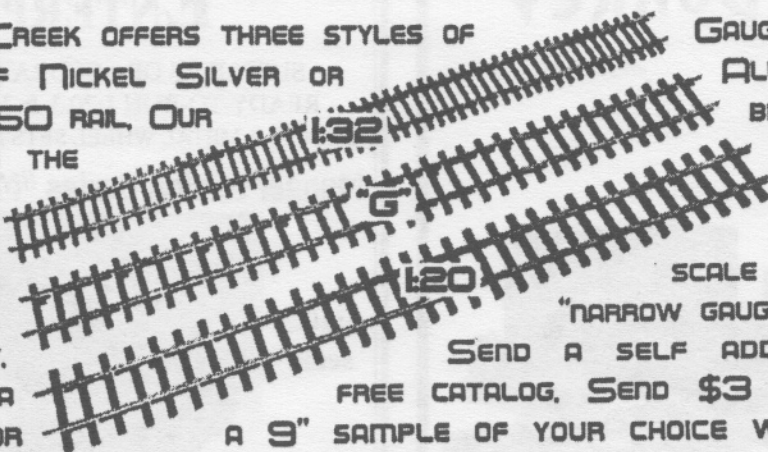


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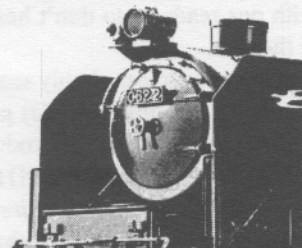
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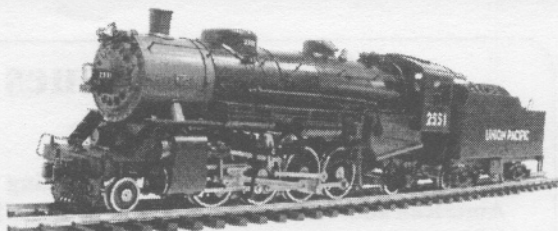
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This has been an exceptional year for steamups. We've attended several and have received reports on many others all over the country and around the world. We are always pleased to share steamup reports and photos (gotta have those photos!) with our readers, so don't hesitate to send them in.

By now you have probably seen the news about the Hornby 00 (HO) gauge live steam 'Mallard' recently introduced. Peter Jones (welcome back, Peter!) mentions it in his *Gazing Into the Fire* column in this issue. In addition to the unusually small size, the unique method of heating the water that caught my attention. Here's a brief description from the

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Happy steaming,

Ron

Outside rear cover:

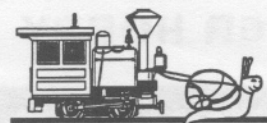
Ryan Bednarik's rare Legend American, pulling a mixed train, makes its lonely way around the lengthy mainline at Jim & Jo Anne Stapleton's steamup in Virginia. What a beautiful setting!

photo by Marie Brown

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