

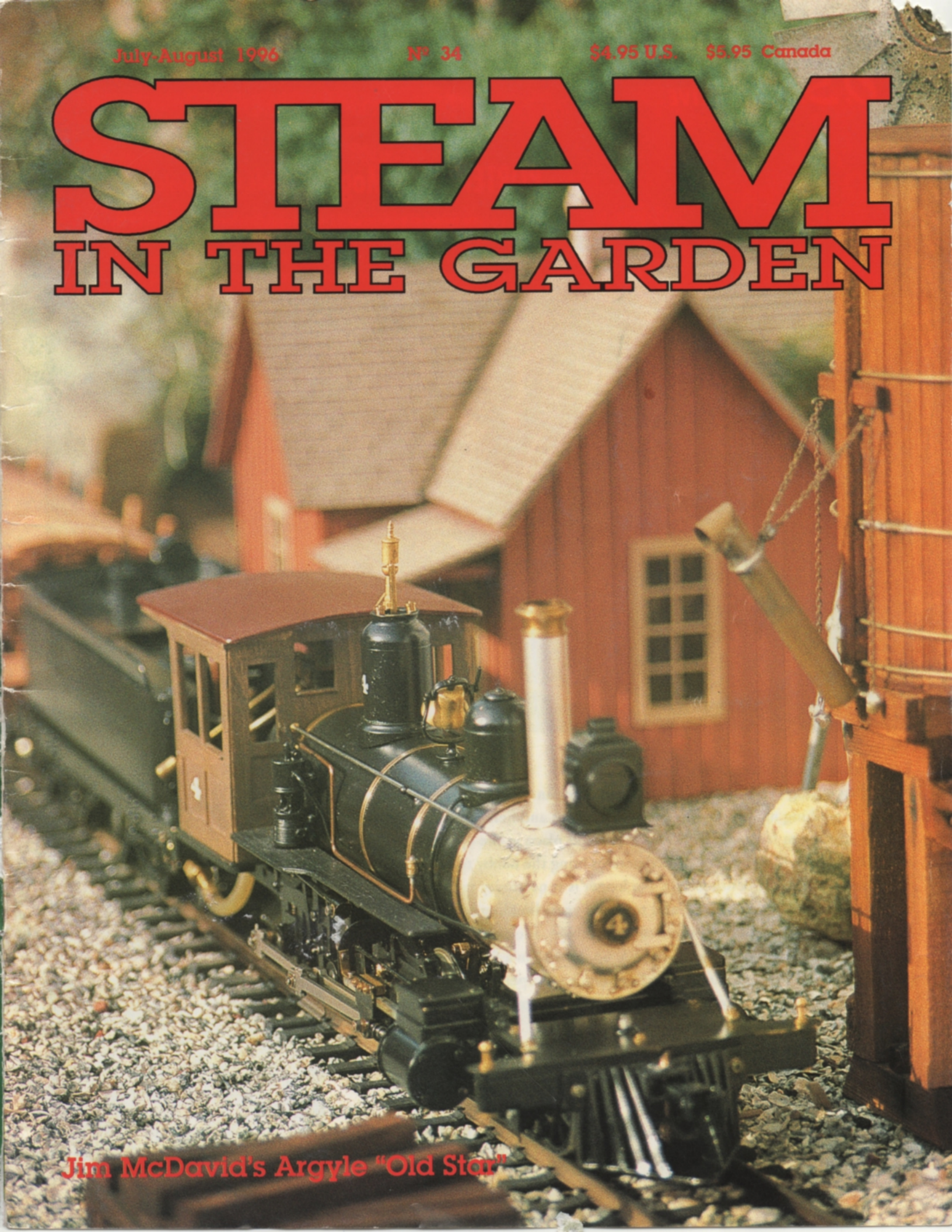
July-August 1996

Nº 34

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STEAM

IN THE GARDEN



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ON THE COVER: It's a warm, sunny day in the State of Maine, and Nº 4, a miniature version of the Sandy River "OLD STAR" by Argyle Locomotive Works, moves slowly into position under the waiting spout. In a few minutes the engine's thirst will be slaked, the engineer will open the throttle and this beautiful locomotive will move out onto the mainline, enroute to destinations unknown and a place in the history books.

Photo by Jim McDavid

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Pearl of Great Price (big promotion
in lieu of a raise)
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Questions or comments? Call us Mon. - Fri. at 607-642-8119 before 9:00 p.m. Eastern time, please—or FAX us any time at 607-642-8978. e-mail address: docsteam@servtech.com

Our web site, *Steam in the Garden Online*, is located at: <<http://www.steamup.com>>.

This publication is created with a great deal of astonishment and delight (and a little bit of perspiration) on Apple Macintosh™ computers.



1996 CALENDAR OF EVENTS

July 7, 1996— Steam Boats Only Fun Float, hosted by Valley Forge Model Ship Society at Gotwalls Pond in Kimperton PA, off Rt. 113 just outside of Phoenixville PA. Condensed navigational course set up, but no judging, no prizes—just a good time. Lots of steam talk ensues! Call Ernest Morris at 610-948-8107 or write RD 4, Box 82, Spring City Rd., Phoenixville PA 19460.

July 19-21—Blue Mountain Gas & Steam Engine Association 25th Annual "Show in the Grove", Bangor, PA. Harry & Paul Quirk will have their gauge 1 track in operation and you are invited to come and run. Other activities include a flea market, antique gas & steam engines, sawmill and country music. Good home cooked food is available. For more information contact Harry or Paul Quirk, PO Box 215, Springtown PA 18081—phone 610-346-8073.

August 29-31, Sept. 1-2, Pennsylvania Live Steamers 5-day 50th Anniversary meet — Rt 29, 1 mile north of Rt 113, Rahns PA (25 mi NW of Philadelphia). Elevated gauge 1 double track mainline with steaming bay, turntable and storage yards will be in operation. Also available - ground level tracks for 1/2" - 3/4" - 1" - 1-1/2" scale trains. Food available on site, lodging available nearby. For more information, contact Harry or Paul Quirk, PO Box 215, Springtown PA 18081— phone 610-346-8073.

September 6, 7 & 8, 1996— Associazione Modellisti foligno Citta'Ferroviaria organizes III STEAM MODELING INTERNATIONAL FESTIVAL in Lovely Umbria — Central Italy— Foligno— Valtopina. Steam locomotive exhibition and demonstration. Scale 1:32 and 1:11 (gauge 1 and 5"). The foreign people who will take their models will have discounts on hotel accommodations and restaurant. We speak English - French languages. Telephone + /342-212485 h8 pm. FAX: + /742-358449 24h/day. Secretary Dott. GUIDO MATTOLI, via Roncali 11, 1-06035 FOLIGNO, ITALY.

September 20, 21 and 22, 1996— 4th Annual ITM Steamup, Noblesville, Indiana. Join us for a weekend of outdoor live steam operation, display and steam talk at the Indiana Transportation Museum Third Annual Steamup on the museum's ground level track in Noblesville, Indiana near Indianapolis. The track consists of five 380 foot loops elevated from ground level. The outer loop is "0" gauge and the inner three rail, #1 and Lionel Standard gauge interconnected by crossover and storage tracks. Registration fee is \$30. A tent, chairs and chairs, distilled water, methanol and butane will be provided and food and soft drinks will be available for purchase. Contact John W. Bloxdorf, 2540 North Ninth Street, Terre Haute, IN 47804— 812-466-1007.

November 2 and 3, 1996— First Annual West Coast Gauge 1 Steamup, San Luis Obispo County Fairgrounds, Paso Robles, California (halfway between Los Angeles and San Francisco on US 101). Contact James Fitzgerald, 1150 Wine Country Place, Templeton CA 93465— phone (805) 434-5058.

January 17-19, 1997 - National Gauge One Steamup, Diamondhead, Mississippi, USA. Don't miss this one....it's the biggest in North America. Make your reservations now so you don't miss out. Contact Jerry Reshew, 5411 Diamondhead Drive East, Diamondhead MS 39525. Phone (601) 255-1747, e-mail: JReshew@aol.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 (ie. ground level or elevated, minimum curve radius, ruling grade, etc.).



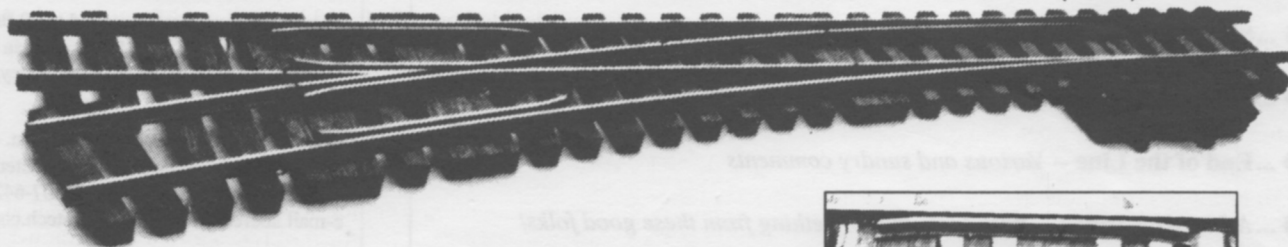
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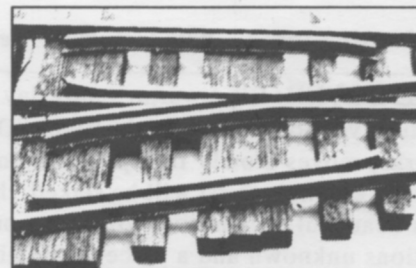
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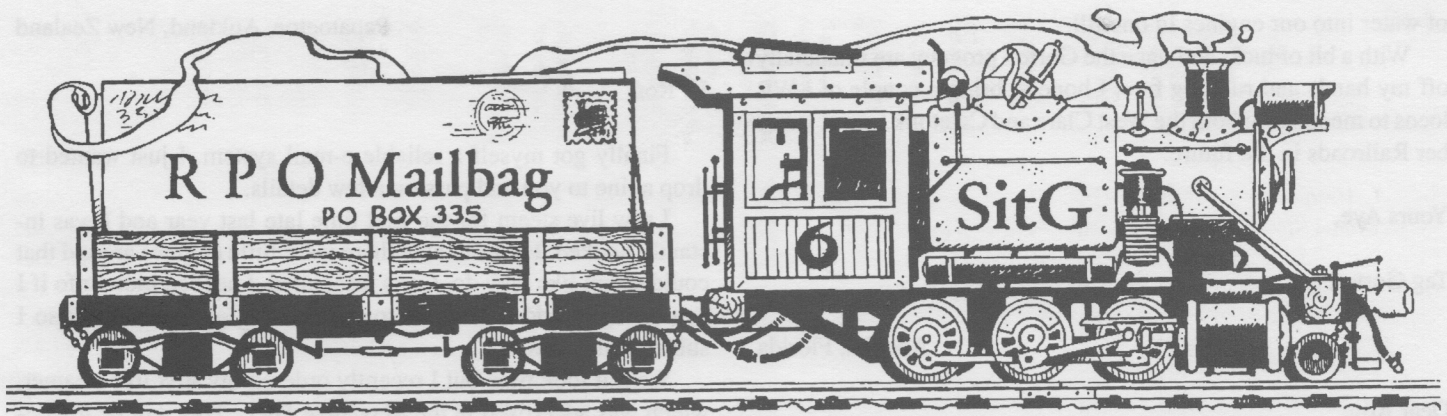
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Letters from readers are welcomed and encouraged. Offer advice, encouragement, suggestions or constructive criticism. Tell us about your current project (and don't forget the photos!) or just share live steam experiences. But please keep your letters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

* * * * *

Cedar Glen, California

Dear Ron,

Started building Charlie Mynhier's locomotive awhile back with material I had laying around the shop. Boiler is built and so is the main part of the chassis. It's a good design, but I made a few changes to suit my materials at hand. Made a turret on the top of the boiler with a whistle valve and attached the water glass fitting to it (similar to Virginian). Bottom fitting on water glass is like Aster's C&S Mogul. In other words, it eliminates Charlie's backhead. I also made a standard screw down throttle valve and built the safety valve directly into the steam dome.

Keep up the great work, and I really enjoy your magazine.

Thanks,

Robert Starr

SALTASH, Cornwall, UK

Dear Ron

Another copy of SitG has arrived and it was a particular pleasure to see Matthew Labine's article on the West Clare Railway - and also to note that his Merlin Mayflower is still performing properly after its long odyssey back and forth across the Atlantic. Currently I have a Merlin Major in the shops of the Longlands and Western Railway broken down almost completely into its component parts. This poor beast has been a non runner for a couple of years, but its problems have been compounded by being thrown into the dark recesses of a damp garden shed by its disenchanted owner. This resulted in the wheels, axles and all non brass bits rusting solid!! A new paint job will be undertaken shortly and Pearse Locomotives have supplied me with new wheels, axles, cranks, etc.

I hope to detail the "raising of Lazarus" in forthcoming issues of SitG, partly out of interest and partly because I think there are quite a few Merlins out there that really don't need that much work to get them running again. Merlins have had a bad press in recent years - for good and sound reasons that I won't discuss in these pages, nevertheless it should be remembered that a properly fettled example from the Tom Cooper era will provide excellent and pleasurable running. And I still think that the Mayflower is one of the prettiest engines around.

I was interested to read Matthew's comments regarding the Pearse Colorado and "vapor lock". Any piston valve locomotive can suffer from condensate in the cylinders. That is why twelve inches to the foot engines carry drain cocks! Certainly Merlins did, but because tolerances on Merlins were pretty slack, and also perhaps because of the sloppy PTFE pistons, it was never a problem - the water found it's way out around the gaps!

Pearse locomotives, on the other hand, are extremely well engineered to very close tolerances, and if the boiler is overfilled there is always a possibility of hydraulic lock. When I first ran Colorado I suffered the selfsame problem and the simple reason that I did was because I neglected to read the words and music! On these long boilered piston valved locomotives it is essential to follow the instructions and open the boiler drain whilst the locomotive is raising steam. This way the boiler cannot be overfilled.

When water ceases to run from the drain and neat steam issues forth, then the drain may be closed and the locomotive will run with absolutely no condensate problems. I have recently spent several days running one of the new Pearse Leek and Manifold locomotives with no problems with condensate at all. I have discussed this matter with Pearse Locomotives and they tell me that, while if the instructions are followed hydraulic lock will not happen, they have decided on a "belt and braces" modification to the boilers to cater to people (like myself) who tend to run first and read the book later. The steam takeoff is now taken from the top of the steam dome, so even if the instructions have not been followed there should be no "vapor lock".

I suppose that some of you may be asking why it doesn't happen to Roundhouse engines. Well, the short answer is that it does if you overfill the boiler - the difference is that Roundhouse use slide valves and water in the cylinders can escape by pushing the valves off the port face. After a couple of moments the condensate will clear and the engine will run smoothly. The general answer is to follow the instructions and not overfill the boiler - and with the filling systems available today for Pearse, Roundhouse and other loco manufacturers, we no longer need to get the maximum amount

of water into our engines in one fill.

With a bit of luck, and once the Gorton progeny are financially off my hands and running free, I hope to bring a couple of LWR locos to meetings at both the West Clare and Catatonk Log & Lumber Railroads in the future.

Yours Aye,

Tag Gorton

Apopka, Florida

Dear Ron,

I thought some of your readers would be interested in knowing that a loose-knit group of steamers exists and gets together usually every month in central Florida. I have about 250 feet of track suitable for running medium to small locos. Over the past two months we have gotten together informally and had great times running "Nothing But Steam".

Early in December Bob Simpson, Bill Casteel, Gary Lyons, and Bob & Fran Osterhoudt rounded out the group.

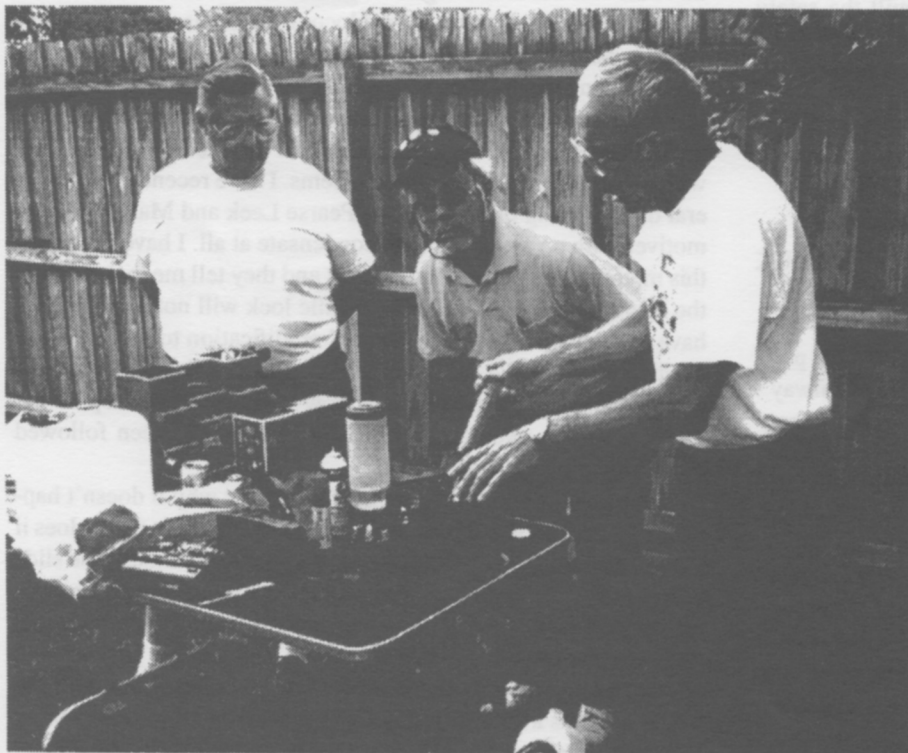
Bob Simpson brought his new Catatonk Shay for the second time. Bob & Fran brought a Pearse "Colorado", Gary Lyons had a modified and repainted LGB Frank S. as well as a Shay, and Bill Casteel and I each had Maxwell Hemmens Porters operating.

In months to come I will be developing a modified trestle network specifically as steaming bays.

We welcome other steamers and visitors. Contact Bill Chamberlain at (407)884 9325.

Regards,

Bill Chamberlain



Papatoetoe, Auckland, New Zealand

Hi Ron

Finally got myself a reliable e-mail system. I just wanted to drop a line to you and pass on a few details.

I saw live steam for the first time late last year and I was instantly hooked. I didn't know there were little engines around that could steam like they do. I was fascinated. I needed more info if I was going to add live steam to my existing garden railway so I subscribed to *SitG*.

Well, it took time but I recently ordered my first live steamer, which was advertised in the May/June *SitG*. This will be my beginning into live steam. It was a tough choice, what with the (Brand-bright) Jane and Argyle's sugar plantation loco, and Roundhouse's and Geoffbuilt's economic offerings. I read everything in my *SitG*'s, ordered catalogues and phoned manufacturers, but eventually the logging theme won out and I went for the little Heisler. I intend to use it to haul empty wooden disconnects around my railway while my Shay (electric powered) hauls the log loads. So in preparation while I wait for delivery I am building a logging camp and lumber mill. Great stuff eh? A man with a vision...

I am trying to encourage more live steam in our club and the more I investigate the more 'loners' I come across who didn't know our club existed. Some of them with live steam. Back in January I knew of only 1 steamer. The figure now stands at 7, small but growing. I think once the 'electric mice' fraternity see live steam in action (which the majority in our club have yet to do) they will seriously consider spending their hard earned cash on a live steamer as a next loco. After all, you can pick up nice steam models for the price of some electrics. The best thing we can do is get out there and show them and let mother nature do its trick.

In time I will no doubt revisit those other manufacturers in search of my second steamer, and no doubt it will be a little larger and cost a bit more. Until then I will continue to devour my *SitG*'s and endeavour to get some photo's up to you from New Zealand to share with everyone else of what's happening down here, and oh, yes...the debut of my little Heisler!

Joe Dempsey

Williams, Oregon

Dear Editor,

I wish to thank all those readers of *Steam in the Garden* who responded to my inquiry of

Photo left: (l to r) Members of the Central Florida Live Steamers Gary Lyons and Bill Casteel watch as Bob Osterhoudt prepares his Pearse Colorado for a run.

Photo by Bill Chamberlain

interest in 1/2" scale, 2-1/2" gauge (gauge 3) size railroads. With letters and phone calls, all of which were acknowledged by letter, the response was much greater than I had expected. Thank you to all.

James C. Newton
1952 E. Fork Road
Williams, OR 97544
541-846-6647

Swarthmore, Pennsylvania

Dear Ron,

Your friends are starting to get worried about you. Missed Diamondhead, missed Jim & Joanne Stapleton's, had stuff about electric trains in "What's New?" in the latest issue of SitG. Time to go for a checkup with Dr. Steam, I'd say...nip in the bud whatever it is you've contracted.

Your concerned friend,

Murray Wilson

Sorry to have alarmed you with reports about battery-power in the latest issue, Murray, and really sorry to have missed two of the biggest steamups in the country. Not to worry.....contrary to rumors circulating, we are not critically ill, nor have we passed on to the Great Roundhouse in the Sky.

You will be pleased (I hope) to know that Marie and I did make it down to Frank & Phyllis Ulman's steamup last Saturday in Williamsport, Pennsylvania. We had a fine time and really enjoyed our first steamup of the year. - ed.

Williams, Oregon

Announcement: If you would like to receive the new Gauge Three Newsletter, send three Large Self-Addressed Envelopes to J. C. Newton, Box 434, Williams, OR 97544. Send no money. You will get one or two pages that will tell you of other people working in Gauge 3, who is producing Gauge 3 products, and what they are doing and building. Gauge 3 is a designation for a track width of 2-1/2 inches.

We would appreciate any letters, comments, articles, new ideas, photos and information of what you are doing in Gauge 3. Let us know if we may publish your address and phone number. Do send those LSASE's and your input!

Thanks,
J. C. Newton
541-846-6647
(address above)

Devon, U.K.

Dear Editor,

SitG N° 32 carries an ad for a video of the '96 Diamondhead

Steamup. But can someone please tell me how I can get one in PAL format, charged to my Mastercard?

I'd like one or two of the many US garden railway tapes that were mentioned in GR magazine last year too, but so far I have only been able to get Marc Horovitz's two offerings, and Vol. I of *Steam Through the Garden*. Otherwise, getting US tapes is tiresome and costly!

UK retailers seem uninterested, but format conversion and payment by other than credit card is expensive and difficult.

All suggestions gratefully received! Thanks!

Yours &c,

James Slater
5 Garden Court,
Budleigh Salterton,
Devon EX9 6PN
U.K.

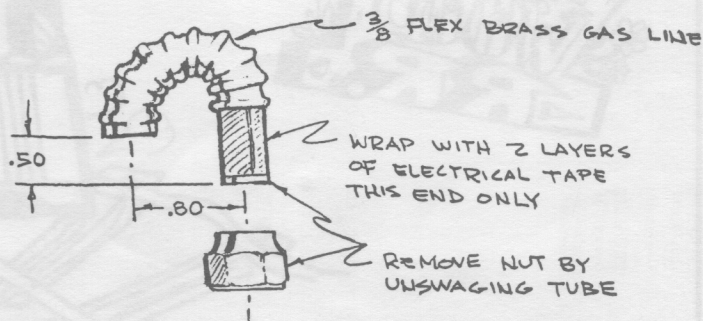
La Mirada, California

Dear Ron,

Here is a tip for C&S Mogul engineers who are running the Ridgeway (Bear Trap) stack, and who might have an aversion to water marks on their wiped down engine. Modify a short piece of 3/8" flex brass gas line per sketch. After getting steam up, swing down the trap and insert the taped end into the stack so the nasty stuff will drain down the cinder tube. Leave a small gap at the drain end. After a few feet, pluck it off (it will be hot) and put it in your pocket. It works great.

Sincerely,

Larry Bangham



Neatly done, Larry! Thanks for sharing your ideas with us. Readers, you can expect to see lots more of Larry's innovative ideas in these pages, starting with his article in this issue on using propane for fuel. - ed.

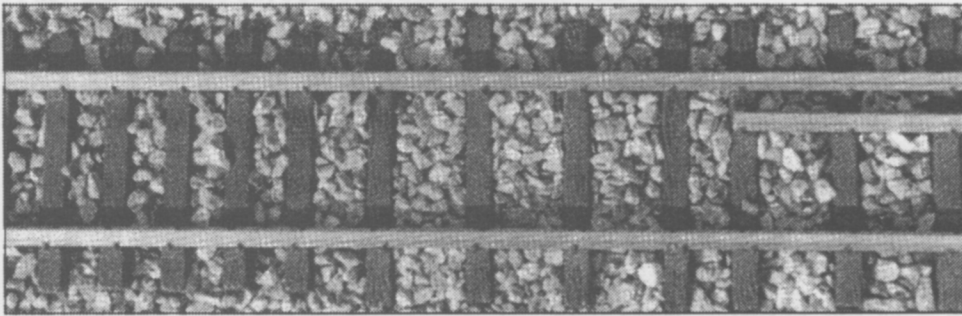


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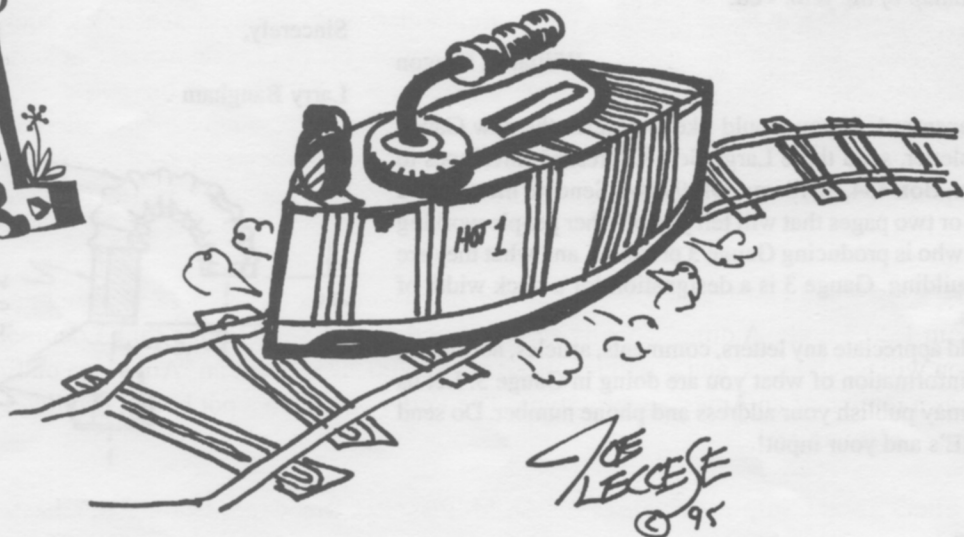


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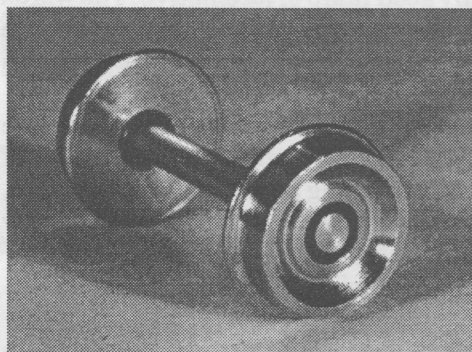
This streamlined "live steamer" will get
those sun kinks right outa your rails!

WHAT'S NEW?

J&H Steam Trains, 2118 Judson Street, Longmont CO 80501 - phone/FAX 303/772-5399 is offering two new products. First is a multi-gauge/scale set of manuals and video titled Building Turnouts. Both stub and point turnouts are covered (see review elsewhere in this issue). The second item, and one which will be of great interest to live steamers, is a 1:20 scale, gauge 1 Heisler called the "1-Trucker". The manuals and video sell for \$25. Write or call for information, and please mention that *Steam in the Garden* sent you.

You just can't be serious about the small-scale live steam hobby without a good source of small screws, nuts, washers and other fasteners. **Micro Fasteners, 110 Hillcrest Road, Flemington NJ 08822 - phone 800-892-6917 or fax 908-788-2607**, has an incredible assortment of fasteners, including lots of great (and hard to find) items for small-scale steamers. Those beautiful little brass hex head machine screws in sizes down to 00-90 for example. Socket head cap screws are available in sizes down to 2-56, and in metric sizes, too. I like the assortments, which come packed in handy plastic boxes with clearly marked compartments. Some of the new items in stock at Micro Fasteners include Dynalock vibration proof lock washers in sizes down to 4-40; miniature rivets with 1/16" shank and 1/8" head; and socket head cap screws drilled for safety wires. Micro Fasteners also carries taps, dies, ball-end hex drivers, plastic compartmented boxes to help organize your spare parts, drills, razor and #11 hobby blades and lots more hardware for our hobby. Call or write for their catalog today.

Gary Raymond Quality Large Scale Metal Wheelsets™, PO Box 1722, Thousand Oaks CA 91358 - phone 805-492-5858, announces a new replacement trailing truck wheelset, the F18RF, which is designed specifically for the LGB CHLOE.



Also new from Gary Raymond is the 152RS, a replacement wheelset for the Lionel E-6 Atlantic. Live steamers may find these items useful in kitbashing or scratchbuilding projects. Both wheelsets are available in RailGlide™, featuring high quality nickel-plated wheels with stainless steel axles.

Another new item from Gary Raymond is their Ball Bearing Wheelsets, available in RailGlide™ with stainless steel axles. Nickel plated wheels, realistic profile and compatible on all G scale models including Bachmann, LGB and USA. These wheelsets won 1st Place at the recent Florida National Garden Railway Convention Gravity Race, outdistancing all other manufacturer's ball bearing wheelsets. All wheelsets are guaranteed to stay in gauge for life. As with all other

Gary Raymond products, these wheelsets are available through your local dealer, or direct from Gary Raymond at the address above.

J&J Trains, 5348 Vista Del Mar, Cypress CA 90630 - phone/fax 714-828-1537, announces a new entry level live steam locomotive in 1:20.3 scale. A dimensionally accurate model of an 8 ton Porter Tank Locomotive to run on gauge one track. Construction will be all brass, and it will be priced at \$275.00. This is not an "American outline" steamer, but built from the ground up as a replica of an American prototype. The Porter will have a pot boiler, oscillating cylinders, alcohol firing and spoked drivers. Contact J&J Trains for more information.

Put those pliers away! Sulphur Springs Steam Models, PO Box 6165, Dept. RB, Chesterfield MO 63006, phone/fax 314-527-8326, now has BA wrench sets in stock for locos and models made in the UK. These sets cover the size range from 0BA to 11BA, which should meet nearly any requirement for wrenching on British-made model steam locos. And if you've rounded off all the BA nuts on your favorite loco by using pliers (we saw you, but we won't tell), SSSM has BA fasteners available in all sizes and configurations. Phone, FAX or write Bob or Carol Paule for more information and pricing. While you're at it, order their NEW catalog.....and tell 'em SitG sent you.



GAZING INTO THE FIRE

text, photos and drawings by Peter Jones

Gazing Into the Mamod's Fire

- or -

Kissing Frogs

There are times when the whimsy has to stop and we need to get down to a bit of proper engineering. So, with apologies to those who seem to enjoy my writing when it is of the more fanciful variety, I propose that, for the immediate future, I write in a more serious vein about putting a wrong right.

The Mamod steam locomotive appeared in various guises and with varying states of quality control. At worst, they were dogs that wouldn't run at all. How it should be done is demonstrated by the Brandbright 'Jane', which I cannot praise highly enough (usual disclaimer). But enough Mamods are hanging about to warrant a short series on making them into decent working engines.

And before going any further, it gives me great pleasure to freely acknowledge that much of the material is based on the magnificent development work of Deryck Goodall, the well-known Mamodmeister. It was he who got down to sorting out what the real problems were and how to rectify them. Some of his solutions were most ingenious. The following writings borrow much from him and we should all raise a glass in his honour.

Indeed, as we go along, his ingenuity is useful to other locomotives that need working on...so, even if you are not of a Mamod persuasion, I suggest that you keep an eye on what follows.

Let's sort out the basic problems. They are:

- Wheels badly fitted to axles - may be eccentric.
- Crankpins loose on wheels.
- Leaky cylinders
- Leaking pistons
- No gland on cylinder covers
- Badly fitted cylinder pivot pin.

This, plus a few upgrades, is quite a collection. But you can do any or all of them, one at a time, and the end result will be a really good lump of locomotive. The words describe the modifications to the kit-built engine, because this was often one of the worst performers, but the notes don't take much thought to adapt to the RTR versions.

Finally, I have to say that, whilst it is unusual for me to get picky, some of this work really does need to be of the engineering variety: nothing serious, you understand, but we have to switch into engineering more, and away from my more normal butchery.

The first thing we are going to make is a simple dismantling jig (which is a useful little tool around the workshop anyway). **Figure 1** shows that it is made from a piece of steel bar, $\frac{5}{8}$ " x $\frac{3}{8}$ ". The dimensions aren't critical, but if you stick to these, you won't go far wrong.

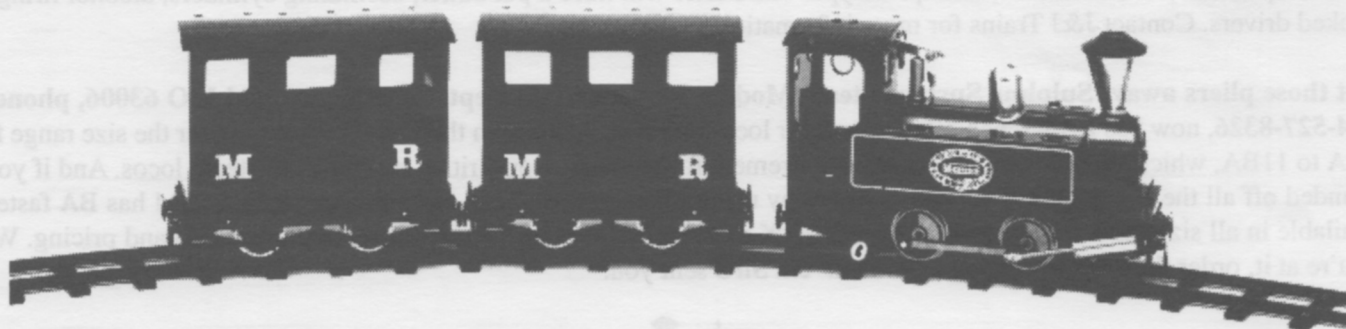
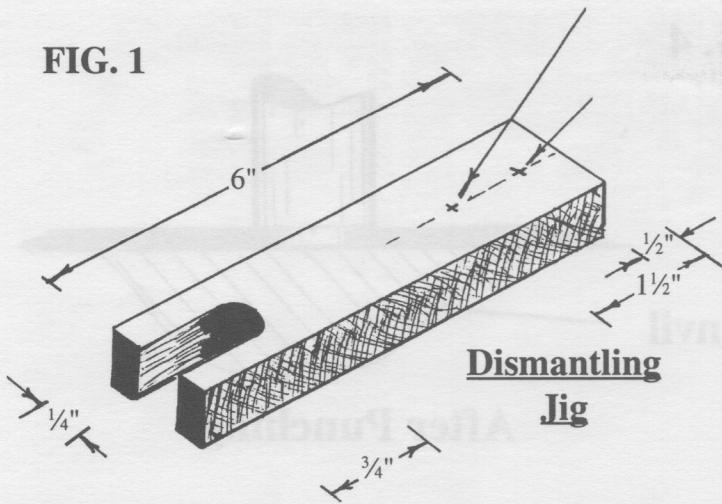


FIG. 1



The tool is held sideways in the vise and is used for tapping out the axles from the wheels.

We then need to make the punch shown in **Figure 2**. The dimensions of that turned shoulder are critical. We need to know the diameter of the small shoulder of the axle bush. It is important to check all four with a micrometer and use the smallest size for reference. The depth of the .035" cut is best measured on the lathe scale, rather than trying to use a mike.

If you are only likely to rebuild one engine then the hardness of silver steel will be sufficient. But for more than one, it will need to be tempered. For those new to the game, this really is an easy proposition. All you do is to heat up the punch until it becomes purple and then quench it out. Then gently reheat and cool to relieve the inner tensions (of the punch, not you...).

Now the purpose of the punch is to CLOSE UP the holes in the mainframes so that the bushes are a snug fit. To the newcomer this seems a little odd, but it works: literally, we punch the hole smaller!

We seek a decent anvil to work on. This doesn't have to mean one that looks like an anvil and is expensive. On the other hand those tiny jeweller's anvils that are available so cheaply are no use. Another no-no is the lathe bed. What we want is a nice chunky bit of flat metal that is smooth. The most easily found source of a suitable anvil is the bottom off a broken electric iron used for pressing clothes. The main thing is that whatever you use has to have enough mass to provide 'bounce'.

As shown in **Figure 3**, the punch is held vertically over the frame and given a sharp tap with a hammer. The action of this is to force metal downwards and to 'fill' around the space of that shoulder. If our .035 dimension was right, the punch should now just touch the anvil. The hole will be smaller and there is a slight depression on the outside of the mainframe.

FIG. 2

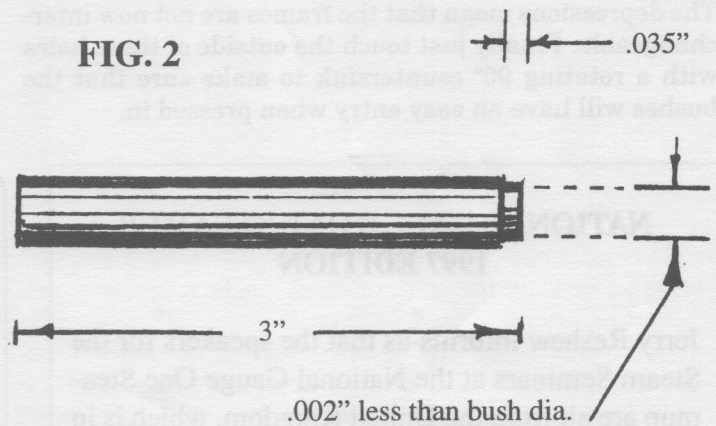


FIG. 3

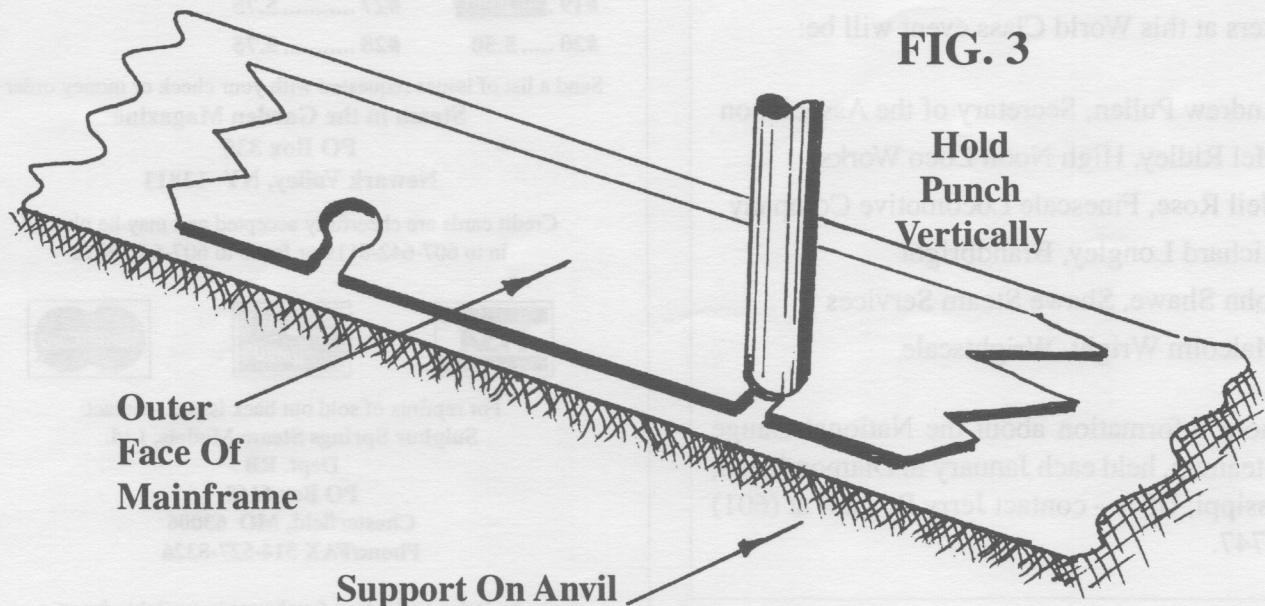
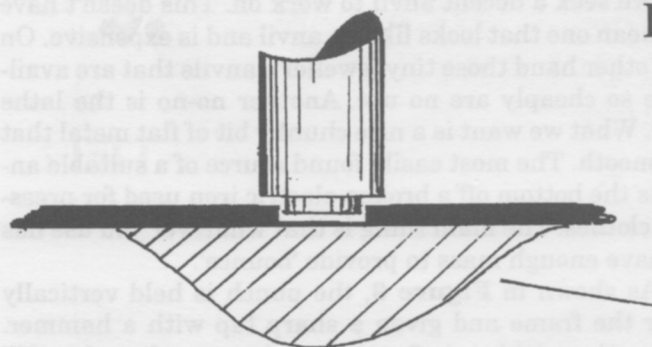
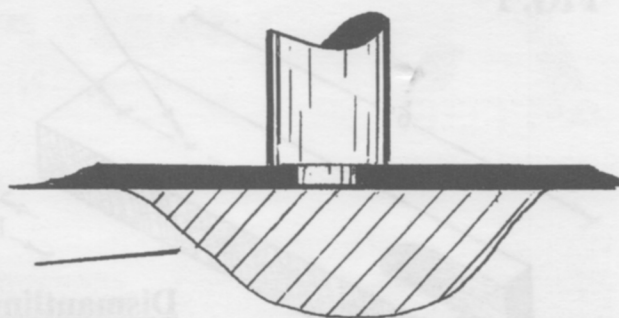


FIG. 4



Before Punching



Anvil

After Punching

Figure 4 shows the effect of this punching. Now treat the other three holes similarly. Immediately the last one has been so treated, mark the mainframes left and right. The depressions mean that the frames are not now interchangeable. Finally just touch the outside of these holes with a rotating 90° countersink to make sure that the bushes will have an easy entry when pressed in.

We seem to be out of space, so I'm afraid that's it until next time, when we'll start on the wheel assemblies.



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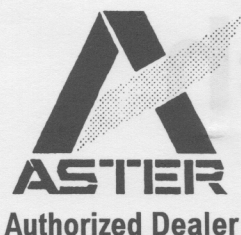
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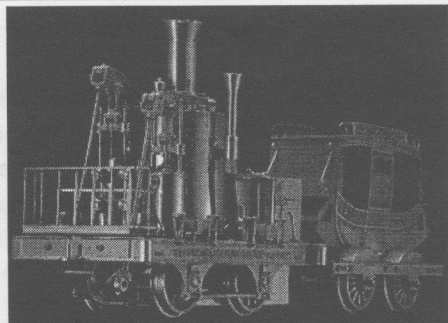
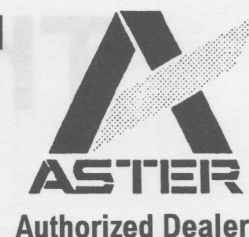


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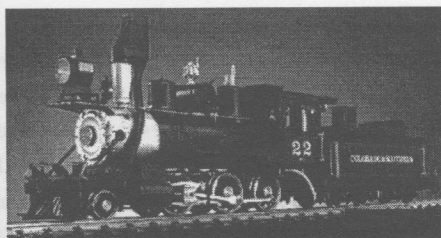
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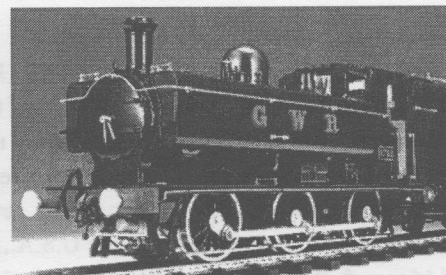
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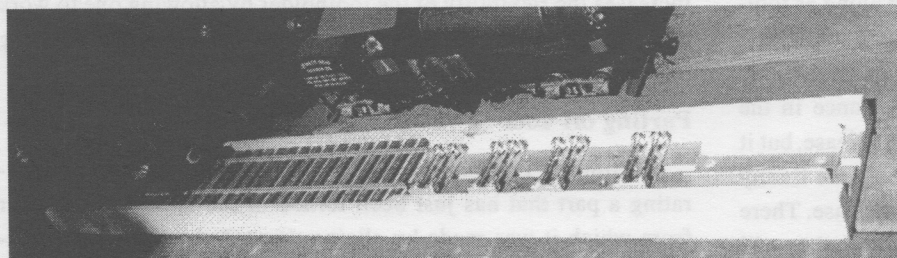
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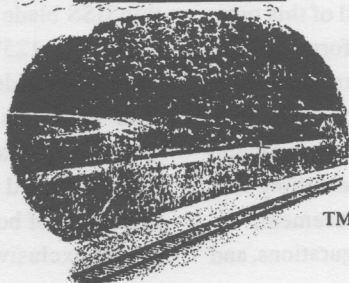
8-Axle version holds Aster Big Boy

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The Fitter's Bench

by Crankpin
drawings by Harry Wade

In my article on toolposts in issue N° 2 (Jan/Feb) I mentioned that I would offer some further description of the "armstrong" style toolholders. This family of tool holders is made of forged steel and each holder has an integrally formed rectangular shank and special purpose head. They are made by several manufacturers, such as Armstrong and Williams in the U.S.A., and Eclipse, Denford and Moore & Wright in the UK, and although I do not know when or where this style of toolholder originated I do know that they have been made in their present form for over sixty years and can be found in virtually every workshop tool tray. This is particularly true in the U.S.A., where for many years these have been the traditional toolholding system of choice. This is so because the toolpost of choice in the U.S.A. has been the lantern or American style and the forged toolholder was specifically created to be used with that type toolpost.

Although several manufacturers continue to offer a full range of forged toolholders, they have become relatively expensive when bought new. However, once bought they will last a lifetime since they almost never break or wear out. For this reason, those among my model engineering cohorts who use them prefer to acquire them second hand, most often when they are passed along as tooling with a used machine, and it is not uncommon for a toolholder to last through many owners. As newer generations of tooling, such as the quickchange systems, find wider acceptance in the home workshop, the use of forged toolholders will decrease, but it will do so slowly and it will be some time before these are finally laid aside for newer technology, if that is ever fully the case. There is also the matter of size to be considered, since not all lathes will accept even the smallest of these toolholders. For those of you with lathes of 3" center height and larger using lantern style toolposts, I would suggest that you keep an eye open at sales, for it would do no harm to have a few of these on hand.

Toolbit Holders

The toolbit holder (fig. A & B), as its name implies, is used to securely hold conventional square HSS tool bits so that they may be used in the lantern toolpost. This holder, as with all of this type, has a one-piece forged steel body with a flat shank formed at the rear for fitting into the toolpost, and a square hole broached in its nose for holding the bit. A square toolbit is inserted into the nose and is clamped securely with the square headed set bolt in the top of the holder. The holder and bit then act as one large cutting tool with an edge that is renewable by regrinding or replacement.

This toolholder is made in several different configurations, and

for up to five different bit sizes. Firstly, each size tool bit from 3/16" to 5/8" requires a holder made for that size, and as the bit grows larger, so does the body of the holder. Holders for the larger bit sizes of 3/8" to 1/2" are rather formidable chunks of metal, not at all suitable for home shop work – unless of course you own a 14" or 16" lathe, so if you use this type of toolholder the 3/16" and 1/4" size will be the ones which will suit your needs.

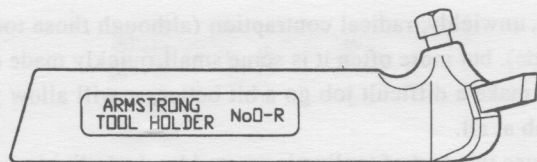
As for the six configurations, the toolbit holders are made in two toolbit positions, straight, and angled. The angled version (fig. A) holds the toolbit about 10 degrees to the shank, which is intended to reduce or eliminate the need to grind top rake (one of the several angles of a properly ground toolbit), thus extending considerably the life of the bit. The straight or zero-angle version (fig. B) holds the tool bit in a horizontal position, parallel to the shank and, although I use this style often with conventional HSS toolbits, these are intended to hold carbide bits which are ready-ground and require no rake.

To further complicate matters, both styles of toolbit holders are made in three shank types, which are: right-hand offset (fig. E), straight (fig. F), and left-hand offset (fig. G). The offset shank increases the flexibility of the toolholder by allowing one to work more closely on the sides and ends of workpieces without having to reach too far with the tool.

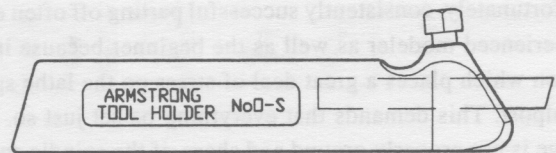
Parting off Tool

Parting off (UK) or cutting off (USA) is the process of separating a part that has just been turned in the lathe from the bar from which it was made by slicing through the bar with a relatively thin tool blade, all this done while it is still turning in the lathe. The primary purpose of parting off is to save time, since one can separate the part and get a decently turned finish on its face at the same stroke. The alternative is of course to remove the entire bar from the lathe, grip it in the vise and hacksaw through, leaving a ragged sawn face on the finished part which then must be put back in the lathe to be dressed up.

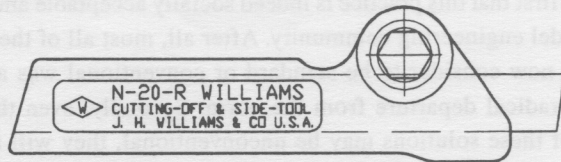
The parting off tool (figures C through C-3) is made to hold a thin HSS blade (marked "X" in Fig. C-1), which may be between .025" and .125" thick, and it is this blade that does the cutting. (The tool holder illustrated here uses a blade of approximately .100" thickness.) Parting off toolholders are made in both straight (fig. G-2) and angled (fig. C-3) versions, with the angled version being intended for getting up close for cutting off near the chuck. I have one of both types, however, I find that I use the straight one almost exclusively because it is more rigid.



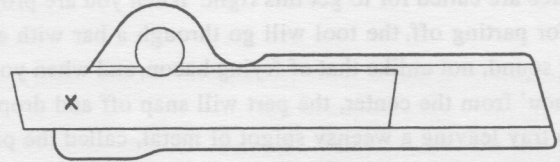
A: ANGLED TOOLHOLDER



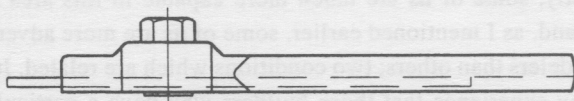
B: STRAIGHT TOOLHOLDER



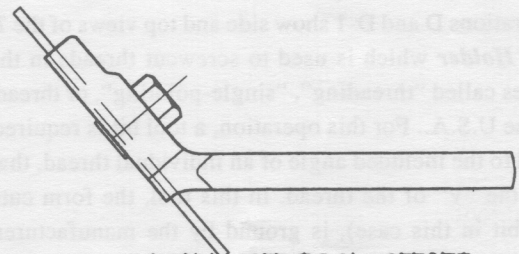
C: PARTING OFF TOOLHOLDER



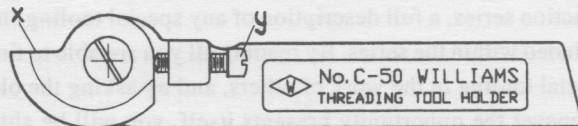
C-1: PARTING OFF TOOL, OFFSIDE



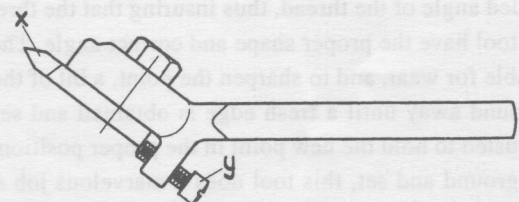
C-2: PARTING OFF TOOL, TOP VIEW



C-3: PARTING OFF TOOL, OFFSET



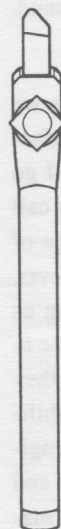
D: THREADING TOOL



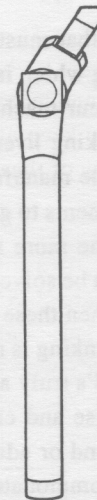
D-1: THREADING TOOL, TOP VIEW



E: RIGHTHAND TOOLHOLDER



F: STRAIGHT TOOLHOLDER



G: LEFTHAND TOOLHOLDER

Unfortunately, consistently successful parting off often eludes the experienced modeler as well as the beginner because it is an operation which places a great deal of stress on the lathe spindle and toolpost. This demands that everything be set just so. If the tool edge is not properly ground and sharp, if the spindle speed is not correct, or if the tool holder is not rigid, you will not have a good job of parting off and will create more problems than are solved. In this case, a little bit of book knowledge and a great deal of practice are called for to get this right. When you are properly set up for parting off, the tool will go through a bar with a soft sizzling sound, not unlike that of frying bacon, and when you are a few thou' from the center, the part will snap off and drop into the chip tray leaving a weensy spigot of metal, called the pip, at the very center of the bar end.

Threading tool

Illustrations D and D-1 show side and top views of the *Threading Tool Holder* which is used to screwcut threads in the lathe, sometimes called "threading", "single-pointing", or thread "chasing" in the U.S.A.. For this operation, a tool bit is required which is ground to the included angle of an individual thread, that is, the angle of the "V" of the thread. In this tool, the form cutter (not called a bit in this case), is ground by the manufacturer to the correct shape from a high speed steel blank and is then bolted to the forged shank. The form cutter is ground on its outside edge to the included angle of the thread, thus insuring that the threads cut with this tool have the proper shape and correct angle. The cutter is adjustable for wear, and to sharpen the point, a bit of the flat at "x" is ground away until a fresh edge is obtained and set screw "y" is adjusted to hold the new point in the proper position. When properly ground and set, this tool does a marvelous job of most thread cutting, however, its size and mass can be a hindrance when trying to cut a weensy thread in crowded surroundings. In these cases, a smaller tool bit held by another means must be ground to suit the occasion. Both straight and angled versions of this holder are made, with the angled version being the most commonly found.

Home-builts

There is another category that must be mentioned before we move on and that is the tooling which is home-built, or manufactured on the spot by the amateur machinist. Many of us will go through most of our metalworking lives without the need to call upon anything outside the lathe manufacturer's normal range of tooling, accessories, or attachments to get the job done. However, many projects attempted by the more adventuresome among us present problems which cannot be solved by normal means due to the limits of our machines. When these situations arise, and they surely will, a bit of creative thinking is required. One of the abilities that is shared by the world's truly accomplished model engineers is the ability to improvise and create machine setups and home-built tooling which extend or adapt the humble home machine tool and enable it to accommodate work which, due its difficulty or unusual size or shape, it was never intended to do.

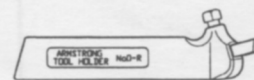
By this I do not mean to suggest that it must always be some

complex, unwieldy, radical contraption (although those too have been made), but more often it is some small, quickly made device that will make a difficult job go a bit better, or will allow you to do the job at all.

Because this sort of tooling is created by the individual to suit conditions that exist at his own workbench, thereby giving nearly as many solutions as there are problems, it is not possible to describe it in specific terms. The light that can be shed on this, however, is first that this practice is indeed socially acceptable amongst the model engineering community. After all, most all of the tooling we now consider to be standard or conventional was at one time a radical departure from the norm. Secondly, even though some of these solutions may be unconventional, they will all be based in the principles of machine tooling which remain constant. Therefore a good understanding of basic tooling practices will stand you in good stead when you set out to make your own little bits.

Lastly, some of us are much more capable in this area than others and, as I mentioned earlier, some of us are more adventurous modelers than others; two conditions which are related. It has been my experience that those builders who have a particularly challenging project under way, or completed, will willingly share with anyone who asks, their techniques for doing a difficult task (some builders will insist upon it even if you don't ask). Should the project be featured in a descriptive article, any unusual tooling requirements are often described, and in the case of a construction series, a full description of any special tooling should be included within the series. By reading all you are able to find about special tooling in the work of others, and by asking the old hands whenever the opportunity presents itself, you will be able to get the information you need to build a knowledge base which will enable you to solve tooling problems on your own when they arise.

Not illustrated this time around are the *boring bar holder* and the *knurling tool*, two additional items which are normally offered by the manufacturers of forged toolholders as a part of their product range. Of these two, knurling is rarely called for in live steam work, but you will discover that boring in the lathe is one of the most important, necessary, and frequently used lathe operations of all. So in our next issue I will cover the tooling for both boring and knurling, and in addition, since we are growing near to the end of our series on the lathe, get a running start on a few of the last bits of tooling which remain.



Locomotive Review --

Aster T-3/BR 89⁷⁰⁻⁷⁵

by Chip Rosenblum
(photos courtesy Tutto Treno)

Technical Specifications

Scale: 1:32

Gauge: 45mm (gauge 1)

Minimum Radius: 0.6m (LGB)

Dimensions: length - 271mm, width - 96.2mm, height - 130.4mm, weight - 2.16 kilos

Wheel Arrangement: 0-6-0T, wheels are spoked type 34mm diameter

Boiler: Type "C" with 2 fire tubes of 12mm diameter, 110ml at 80% full, operating pressure 3kg/cm²

Fittings: Safety valve, regulator valve, blower valve, check valve, pressure gauge and water gauge

Firing: 4-wick tube alcohol burner, capacity 50ml at 80% full

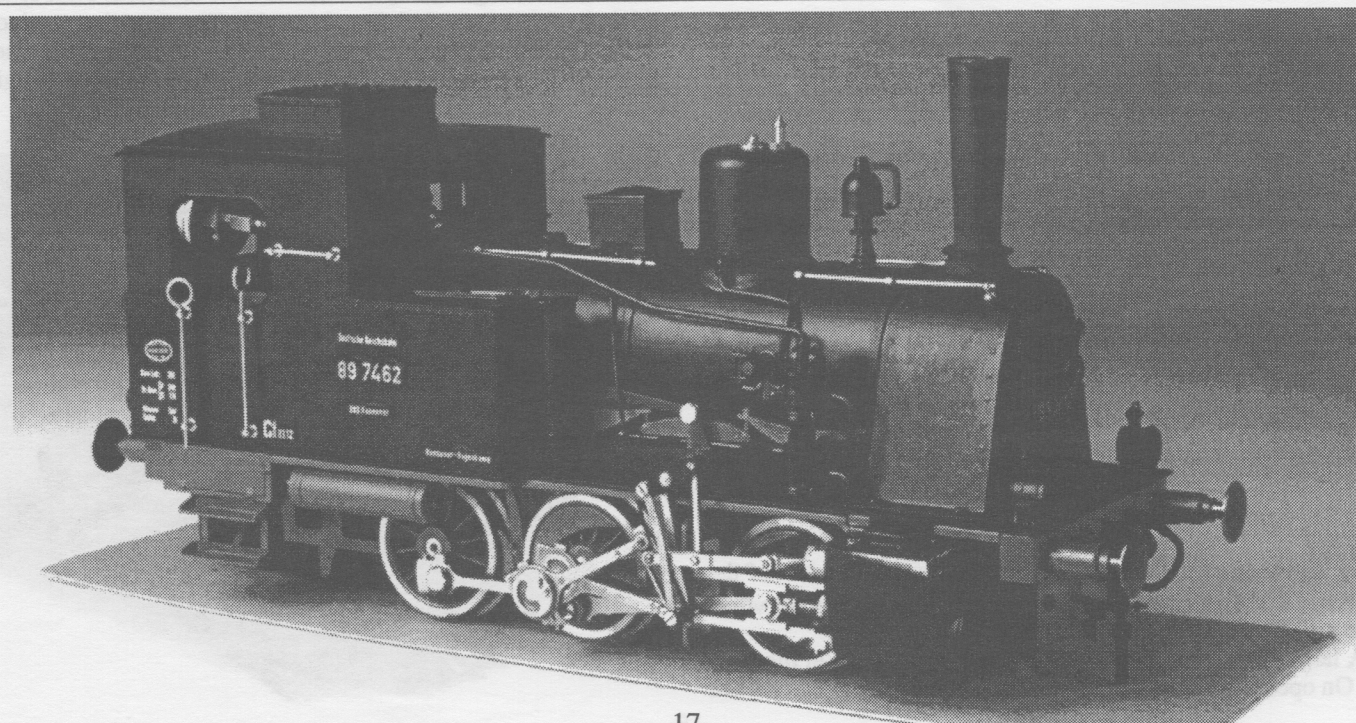
Cylinders: Phosphor bronze castings, 2-cylinders - 10mm bore x 15mm stroke

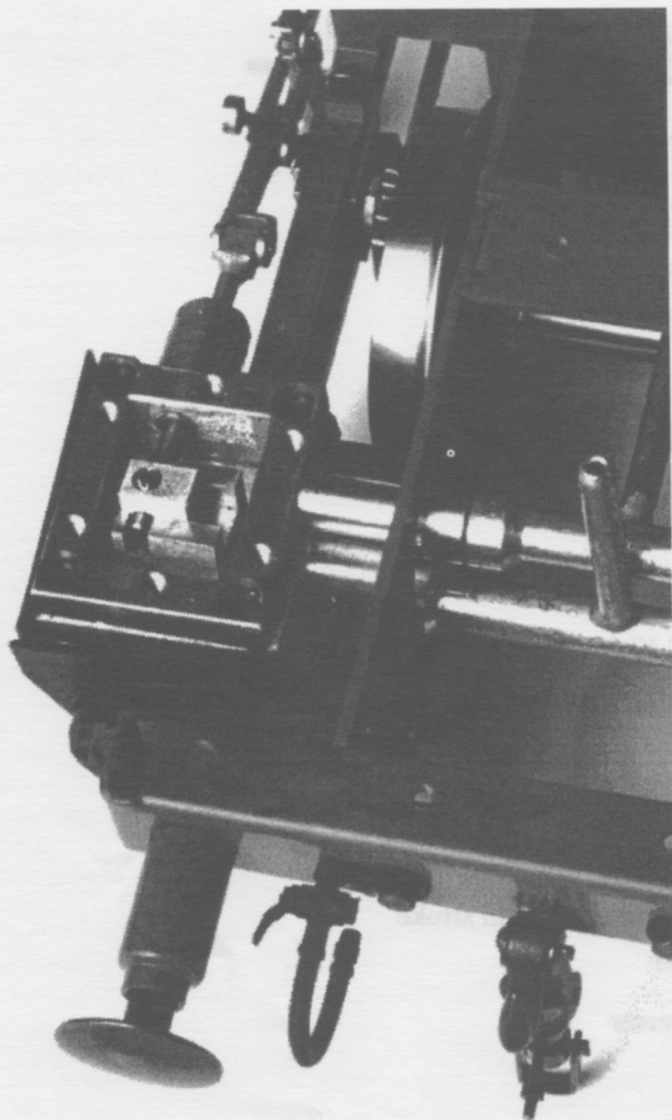
Lubricator: Roscoe displacement type

Valve Gear: Allan straight link valve gear with screw reverser

Coupler: European standard hook-type coupler

Available From: Any Aster dealer





Photos this page

Above: A close look at the interior of the valve chest, with timing adjustments completed and awaiting the installation of the valve chest cover. Don't spare the elbow grease in bringing the mating surfaces of the slide valve and port face to a high polish.

Lower right: Rear $\frac{3}{4}$ view of the Aster T-3/BR 89. The connections below the rear buffer are for hooking up to the optional Aster water/fuel car for extended runtime duration.

When asked if I'd build the kit, then write a review of the new Aster T-3, I, with the exuberance of anyone ignorant of what, exactly, they're getting into, said "sure"...

A large, brown cardboard box arrived from *Steam in the Garden*. On opening it, the first thought that crossed my mind is that it

was nearing the gift-giving season, as peering out at me was a dappled green shiny cardboard box, with an iridescent silver Aster logo and name embossed on the box. My next thought was that it looked like a box of Holiday fruit from Harry and David. Then I noticed that the strapping tape around the original cardboard box, painted silver, would make excellent safety tread material... Maybe I could quit here...

Actually, it was refreshing to know that I was in way over my head, and that any engine that required two instruction books to build was probably going to sit on my shelf forever. Except for Ron's deadline...

Reading through the instruction book and diagram book of assembly was incredibly reminiscent of long-past Christmas Eves with a bicycle due by dawn...

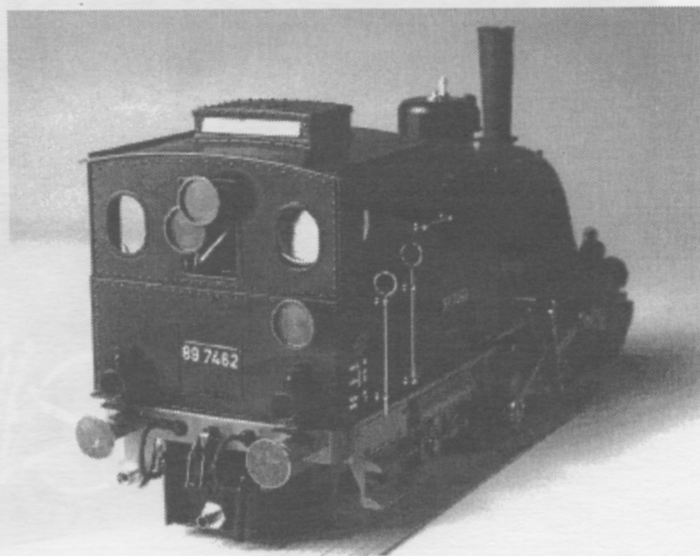
"...I find working on this kit a marvelous, almost Zen-like process."

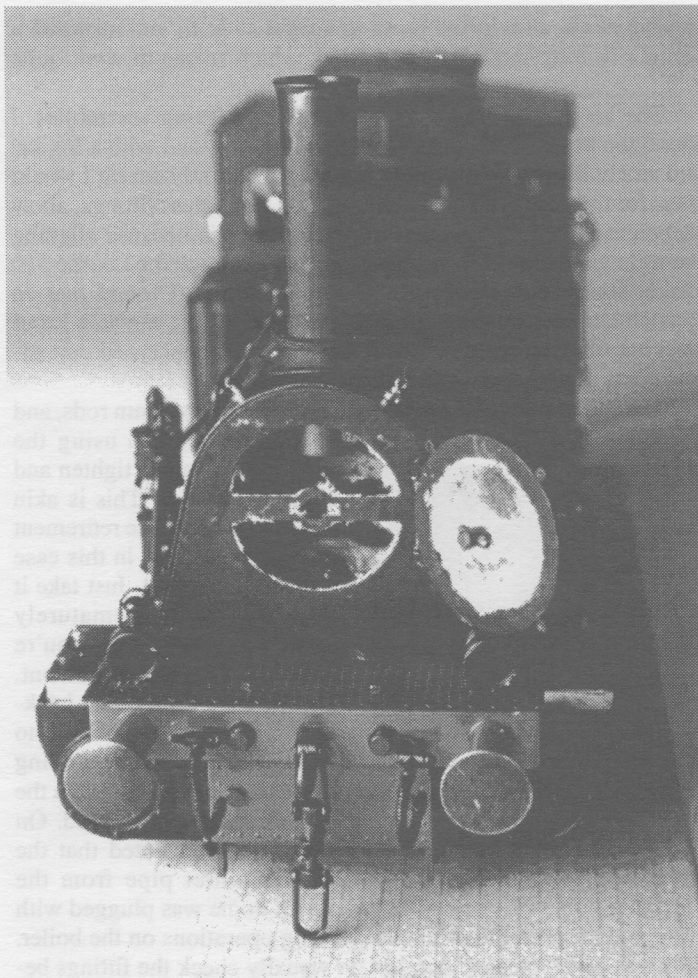
I'm not sure of Tab A, much less Slot B, and there's no instruction as to whether to remove the staples from the first page to free up the sandpaper and ceramic sheet...

Actually, the directions and diagrams are quite clear once work begins. Much better than theorizing with just a book in front of you. It does take some study for both orientation of the parts and insertion points of screws and fasteners, but between the instruction manual and the illustration book, if you take your time, the step-by-step method is an excellent approach.

I did find that having a better assortment of tools was critical to precise assembly. The tools provided with the kit are marginal at best, and an assortment of good quality small tools made some otherwise difficult fastener installations go very easily.

At the end of step one (the assembly of the buffers, drivers, and side rods to the chassis), I stopped to look at what progress was made and the engineering and instructions involved. First of all, I think that it's a very well thought out kit. The parts that need to be factory built (chassis, drive rods and bushings) are, and the assembler is given a stable base on which to initiate building the engine.





Photos this page

Above: Open wide and say ahhhhh! With the smokebox door open, one can get a clear view of the smokebox interior.

Lower Right: The completed chassis, nearly ready to run on air.

The drivers turned freely, after a little "running in" with oil under finger spinning, but if they hadn't the instructions provide good trouble shooting tips and areas to look at for binds. I like the fact that they don't make the assumption that everything will always go smoothly, and provide a sense of direction as to where to look for a fix. This helps relieve creative paranoia if things don't go exactly to plan, and a good roadmap if things get a bit off track.

The next step entails assembling the cylinders. The instructions say to lap the valve face of the cylinder casting and the slide valves to remove the milling marks, and to provide steam-tight mating surfaces. I placed a glass slab in a pie pan filled with water to just cover the glass, thus providing a water lubricant for the entire process and the ability to wash away debris while lapping. This is a critical step for providing steam-tight valves for optimum operation. This is also the first item I found in the kit that represented poor quality control. One of the cylinder faces had fairly extensive linear scratches, and was also an extremely porous casting. With heavy lapping the scratches can be removed, but the po-

rosity cannot. This was a casting that should have been scrapped.

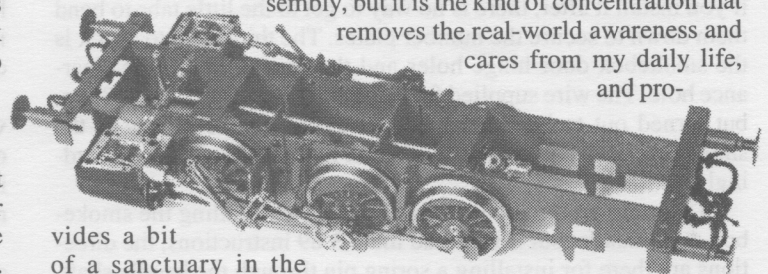
The other casting was in pretty good shape, except it, too, should have been scrapped due to a major gouge leading directly out of one of the valve ports. When you are faced with major reduction of material to reach a smooth surface, forget starting with the 1000 grit paper included in the kit. Start with 400 or 500 grit (up to 400 grit silicon carbide paper can be found at almost any woodworkers supply house, and from there up to 2000 or so can be found at an automotive finishes supplier). The art of polishing is to remove scratches with finer scratches, so stick with the coarsest paper you choose until the surface has even scratches. Then move to 600, then 1000, and then, to be really precise, to 1500 grit. Make sure to rinse your castings, slab, pan, and change the water between grits, as even one grit of coarser material in the lapping pan can ruin the finish of the next lapping grit. Although I was left with the porosity in the one cylinder, and the gouge from the valve port in the other, the faces on the whole were mirror smooth before I proceeded.

This section also briefly footnotes to make sure that the valve block slides freely in the slide valve prior to proceeding. Check this carefully, as my castings would not move at all. A brief lap with 600 grit on the sides and bottom, and a slight radius to the edges left them sliding like trying to get to the car in an Ohio winter!

Another caveat here is applying gasket eliminator to the gaskets while assembling the cylinders. The "tiny bead" obtained directly from the tube is only "tiny" in 12" = 1' scale for those reassembling a water pump on a 1942 Willys Jeep! This is not so in 1:32. My suggestion is to put a small dab of the compound on a plastic coffee can lid, and use a smooth metal tipped implement to pick up and daintily dab and spread the compound. This works well, saves cleanup, and leaves your cylinder bore free of a large glob of squeezed out glop! The rest of the assembly sequence went very well, with all of the parts correctly machined and accurately fit together.

As I began assembling the valve gear, I noticed in an additional technical bulletin provided by Aster that the drive rod on the main coupled drivers may have been assembled slightly askew, and, if so, it was to be returned and a replacement obtained. I mention this as, if you read this prior to initiating assembly of your kit, it will save time and hassle of undoing assembly to retrieve the drivers, as I had to do. It will also save downtime waiting for a replacement part.

One observation while waiting for the part so assembly can proceed: I find working on this kit a marvelous, almost Zen-like, process. Although I'll look forward to the finished product, it will be a bit of a letdown to complete the kit, as the act of working on it is incredibly relaxing. Yes, there is great concentration during assembly, but it is the kind of concentration that removes the real-world awareness and cares from my daily life, and pro-



vides a bit of a sanctuary in the midst of normal confusion. For that reason alone I could recommend building this kit.

A nice observation on both quality and responsiveness at this point is to note that the correctly aligned part was shipped the same day that Aster received notification, and arrived within one week

of that date.

So then I was able to proceed to step 3, "Assembling the Allan valve gear". My first response at opening the parts bags and looking at the illustration was that I was back in an organic chemistry final. It wasn't enough to know the formulas, but I was once again faced with the spacial orientation of the bonds... This is where both the instructions and the illustration really proved just how well thought out and sequentially constructed they were. By taking each step at a time, the instructions walked me through a very complicated assembly in a way that made the process doable, and the resulting assembly accurate. Now I can't wait (but I must) to see if it operates and that I really did get everything in the right place at the right time.

The next steps comprised installing the footplate and the adjustment of the Allan valve gear linkage and slide valve setting. The illustrations were very clear on this point, and the instructions good on how to introduce compensations to adjust the slide valves. At this point it was time for the air test. This is the moment of either triumph or disaster, in the sense of discovering if what was assembled to date actually works, or if one must go back to ground zero. It worked well, and, after a few minutes, I was able to reduce the air pressure to about 10psi and still have the mechanism tick over like a Swiss watch. This test is an excellent opportunity to check clearances during running, as there is some lateral play in the valve gear that is not readily apparent when hand-spinning the drivers during installation. Pay particular attention to any ticking or knocking sounds, as some of the pins used to install the linkages have very little clearance, and this is the time to provide any adjustments.

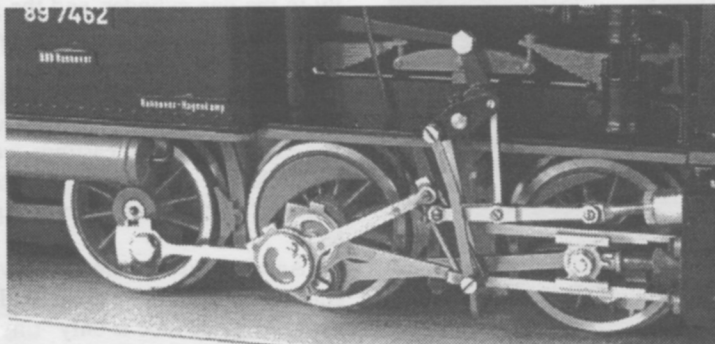
The installation of the ceramic shielding is pretty much a cut and try affair. I have three suggestions for this step, however. The first is to not install any piece until you have tried it in place, as the measurements given in the instructions and illustrations neglect clearance for some of the spot welded struts. This fitting process will also allow the builder to mark and then cut out on the bench any areas needing it, thereby making your cutouts much neater and less likely to disturb the shielding once in place. The second thing to do is to ignore the step directions and to install the number plates before installing the shielding, and not after. This is because if you install it after, there is no way to get to the little tabs to bend them down to secure the number plates. The third item to check is the smokebox door hinge holes and the smokebox handle clearance hole. The wire supplied for this part is supposed to be 0.8mm, but turned out to be 1.0mm and the holes for the hinges in the smokebox door and on the smokebox had to be enlarged accordingly.

There are no instructions for the T-3 for installing the smokebox door handle, but if you read the BR 89 instructions, the directions are there for installing a spring pin through the handle shaft. This acts as the detent when the door is closed as well as retaining the handle. However, the clearance hole is far too small for the spring pin, and I had to enlarge mine to get the spring pin to fit with a press fit without risking damage to the handle by having to apply too much pressure. I finally decided that it was not worth

forcing at all, and drilled it out to a tight slide fit and installed it using a bearing retaining compound, which seems to work quite well.

The kit then proceeds to the boiler and fitting assemblies. I found the boiler well constructed and finished, and with a logical and nicely illustrated assembly sequence. The only caveat I would issue for this step is when assembling the sight glass fittings, allow sufficient time to complete it in one go. This is because aligning the sight glass is a fiddly proposition, and although the Loctite 510 gasket compound states a set in 2 to 12 hours, I found that an Einsteinian time dilation applied and there wasn't a whole lot of working time until it set enough that I became concerned that adjustments would possibly break the bead seal.

Also, as a "native" American, I was fresh out of 6mm rods, and so was reduced to using the sight glass itself to tighten and align the fittings. This is akin to taking some of the retirement fund to Vegas, but in this case it worked out well. Just take it slow, and don't prematurely tighten anything until you're satisfied with the alignment. The air test of the boiler back-head fittings (I got lucky - no leaks) showed no air coming from the blower pipe when the blower valve was opened. On disassembly, I noted that the blower outlet pipe from the steam dome was plugged with



Above: A closer look at the fascinating Allan valve gear used on the T-3.....a real delight to see in motion.

a flux bloom from the original soldering operations on the boiler. This was easily cleaned out, but do visually check the fittings before assembly to make sure that they are open and clear.

Attaching the boiler and smokebox to the chassis is a particularly gratifying step! This is because, at least visually, one has now attained "engine". The procedures are logical and well-illustrated, and show good engineering and instructions. However (there's always one of those, isn't there?), under the "Hints from Heloise" corner, the boiler is attached to the chassis using four bolts. The drawings show this but the instructions don't. The rear two bolts are already in place when the buffer beam was attached early on, so pull those prior to fiddling the boiler in place and save yourself the trouble of removing the boiler and repositioning it a second time. With all four bolts in position it's a very secure installation.

The rest of the assembly procedure went according to the instructions and illustrations, with only the normally expected adjustments of any kit during the finishing phase. I found that the hardest part was cutting the wicks to the correct length and stuffing the wick tubes correctly, but even that is just tedium, and not difficult.

The big smile happened when I fired up the finished T-3 and watched it run! Well, this is Ohio in the winter, and so the "run" occurred with the engine on two bricks on top of the chest freezer in the basement. I can't wait until the spring thaw to actually see it running on track!

All in all, building this kit was an immensely satisfying experience. The engineering, instructions, and support created by Aster in developing the T-3 combine to make an impressive product, and I would not hesitate to recommend the kit and the engine to one and all!



What Is the Best Fuel for my Gas Fired Gauge One Locomotive?

by Kevin O'Connor

The best fuel for a gauge one gas fired locomotive is the one that is safe to use, performs best over a wide range of temperatures, and is available at the lowest cost. I have arbitrarily decided to not consider propane (Pn) as a fuel for gauge one locomotives because of its dangerously high container pressure at any reasonable temperature. All manufacturers of gauge one locomotives specifically caution against the use of propane as a fuel in their locomotives. I am fully aware that some model engineers have had great success with propane as a locomotive fuel, but that has been in locomotives specifically engineered to accept the very high pressures inherent in the use of propane as a gauge one model locomotive fuel.

Temperature performance is important because the liquid gases that are used in gauge one locomotives are dependent on temperature in order to vaporize properly at a pressure high enough to be useful in the locomotive's burner. If the temperature drops too low, vaporization slows down and the pressure at the burner's nozzle drops. In the case of butane (Bn) this drop can be so great that the burner refuses to burn much below 60° F without additional heat in the form of a hot water bath in the tender or a cab mounted gas tank that absorbs heat from the locomotive's backhead. Even if the outdoor temperature is above 60° F the vaporization of the liquid gas in its storage tank will cause it to lose heat energy. If the storage tank is too well protected from the outside air, and little additional heat energy can reach the tank, the gas pressure in the tank will drop until some steady state of reduced temperature vs. pressure is reached. This condition explains why many locomotives start off their run pulling strongly only to slow down or struggle by the end of the run. It has nothing to do with the supply of liquid gas in the container, but it has everything to do with the temperature of the container as it affects the gas pressure at the nozzle.

Most of the liquid gas containers that are used to fuel gauge one locomotives are re-

ally designed to fuel camping stoves, illuminating devices, and heaters for campers, backpackers, hunters, and other outdoor users. The manufacturers who cater to this market have a problem similar to the one that plagues gauge one locomotives — outdoor temperature. Liquid gas evaporation is just as important to the proper operation of their appliances as it is to the burner jet in a gauge one locomotive. As the outdoor temperature drops, the efficiency of their products fall off and, in days past, the cold weather outdoorsman turned to gasoline and kerosene fuels when the weather turned frosty. The liquid gas appliance manufacturers looked for a gas that would perform better at lower temperatures, and the petroleum industry responded by developing isobutane (Bi) liquefied gas to replace the butane liquefied gas then in service. Isobutane is an isomer of butane. That means that it has the same number of hydrogen and carbon atoms, but that they are rearranged in a different order within the molecule. This change results in a product that exerts more pressure within its container

at any given outdoor temperature than regular butane. Although isobutane boosts the performance of outdoor appliances it has one drawback and that is price. The petrochemical industry charges more for isobutane than for butane because of the cost involved in juggling the atoms of hydrogen and carbon around.

It had long been known in the petrochemical industry that it was possible to mix two related gasses together (such as butane and propane) and to produce a hybrid gas having a container pressure somewhere between the two, depending on the ratio of one gas to another. This approach had a problem insofar as the combined liquid gasses would not remain in a homogeneous state, but would disassociate themselves over a short period of time. In effect what remained was a container half full of propane and half full of butane. This meant that instead of having a container of liquid gas at some median pressure it would revert to the pressure of propane for the first portion of the use and

TF°	P _N P#	B _N P#	B _I P#	GAZ P#
20	40		3	5
30	50	0	7	10
40	63	4	12	15
50	78	7	16	20
60	92	13	23	28
70	110	17	30	35
80	128	23	38	44
90	150	31	47	53
100	173	38	57	65
110	200	48	69	75
120	227	55	81	90

LEGEND: P_N = propane; B_N = butane; B_I = isobutane;
GAZ = 20% P_N + 80% B_N; TF° = ambient
temperature in F°; P# = PSIG

drop to the pressure of the butane for the remainder of the use.

I am told that the push in the United States to free the atmosphere of Freon products used as propellants in aerosol containers convinced the petrochemical industry to revisit the blending of various liquid gas products. They saw a potential market for these products as a replacement for the soon-to-be-banned fluorocarbons, but the problem of disassociation still loomed. At this point the science of cryogenics entered the equation. Cryogenics is the study of the behavior of substances at super low temperatures — somewhere down around absolute zero. It was found that if two liquid gasses were blended at very low temperatures, somewhere around their freezing point, that when they were allowed to heat up to room temperature they would remain stable and exhibit pressure characteristics proportionate to the ratio in which they were mixed. The result of this work was a new family of aerosol propellants and the first of the propane and butane liquid gas products for the cold weather outdoorsman. There is one caveat. Cryogenically blended liquid gasses will, over time, disassociate themselves if the container storing them is subjected to temperatures below 20° F for extended periods of time.

These blended products are now available for use in gauge one locomotives, but they tend to come in containers that do not accept the standard screw-on decanting valve that is used on the butane or isobutane containers. There are exceptions, regional in nature, such as some of the imported containers from England. I have been told of mixtures as high as 40% propane to 60% butane, but I have never seen them. I suppose that their performance is superior to isobutane, but I suspect that their cost is higher per unit of measure.

Jim Hadden, who regularly steams all winter in Utah, has been using a liquid gas product sold under the brand name Gaz™, which consists of a 20% propane and 80% butane mix. I started using it last winter here in Sacramento. The advantage of using Gaz over isobutane is two fold; it works better in cold temperatures because of its higher container pressure (see figure one) and it's far less expensive to purchase per unit of measure. I pay 1¢ per gram for Gaz (1# container) vs. 1.5¢ per gram for isobutane in my local outdoor supply store. Unfortunately the Gaz container is one that has no screw threads and it will not accept the standard decanting valve. Both Jim and I were using a Rube Goldberg setup to milk the Gaz container, but we felt that the process was too dangerous (frozen fingers) for publication. There is now a decanting valve available for the Gaz container. I am manufacturing and selling them here at Unit Shop. The research for this article identified the availability of a superior liquid gas product at a reasonable price and I decided to facilitate its use in the hobby by making the "Hadden Decanting Valve" available at a modest cost.

My hope is that this discussion of liquid gas fuels for gauge one locomotives sheds some light on the folklore that seems to surround them in conversations at steamups. If anyone has any additional information to share, or questions to ask, I may be reached at P0 Box 161631, Sacramento, CA 95816-1631. A SASE will facilitate a prompt reply.



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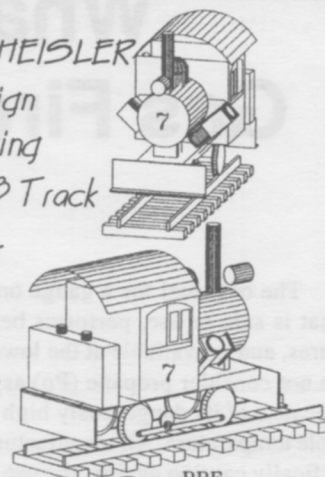
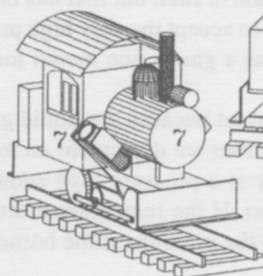
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Product Review:

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In 1992 Bob Hartford located a pair of 36" narrow gauge logging disconnects which once hauled logs for the L. E. White Lumber Co. of Mendocino County in California. These trucks now belong to Henry Sorenson of the Northern Counties Logging Interpretive Association. Bob took measurements and has produced this kit in 1:20.3 for gauge 1 track. A quick check with a scale rule while looking at plans drawn by Al Armitage, and with information supplied by Bob Hartford in the Jan/Feb 1996 issue of the *Narrow Gauge and Short Line Gazette*, showed these trucks to be right on for 1:20.3.

Logging disconnects were very common on logging and lumber operations in the U.S., so these trucks should look great behind any of your live steam logging locos.

The kit comes with several pages of instructions, a complete parts list and three sheets of detailed drawings. There is also a list of tools and any materials you might need. As with any kit, read through the instructions and go over the plan sheets to familiarize yourself with the model before you begin.

A good clean work surface is a must with this kit. There are many small parts and you will be using very small drill bits. They can and will find any hole or crack in your work area and get lost. I use a two foot square piece of plexiglas and that seems to work pretty well.

Finishing all parts should be done prior to assembly. There was very little flash on the castings so all you'll need for cleaning them will be a small jeweler's file. I used A-West's Blacken-it on all the metal parts, which gave them a nice weathered black finish. I also used Blacken-it on the steel wheels and they came out with a great looking coat of rust. All the wood parts received a coat of

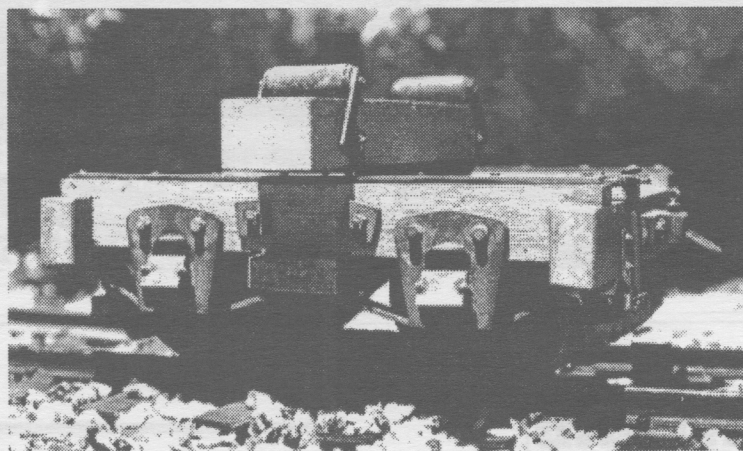
Floquil's Flo-stain driftwood and several coats of Rust-all blackwash for an unpainted, aged wood appearance.

Assembly of the finished parts is straight forward, but will take some time due to the amount of detailing. I put in about 12 hours total, including finishing and assembly. Bob recommends an assembly jig if you are planning on building more than one set, which should cut down your assembly time. I used cyanoacrylate adhesive on all wood to wood and wood to metal joints with good

results. The fit of the laser cut wood parts is excellent, requiring no filing except for the installation of the center beams, and this was due to the finish on the ends. The only problem I had during assembly was the installation of an end beam backwards (inside on the outside). This is easy to do, so pay particular attention to this when attaching the sills.

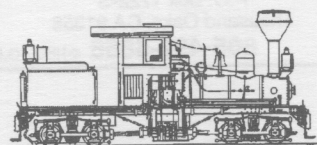
The finished kit is eyeopening! It will be a welcome addition to any logging line, whether in service or just sitting on a siding. I guarantee these disconnects will catch the attention of any visi-

tor to your line. Bob promises to introduce more kits in 1:20.3 in the future to add to the ones he already offers in this scale. We'll be looking forward to their introduction.



Up close and personal view of one of the Hartford Log Buggies built by the author. Nice level of detail, and an excellent job of weathering. Very convincing!

article & photos by Jim McDavid



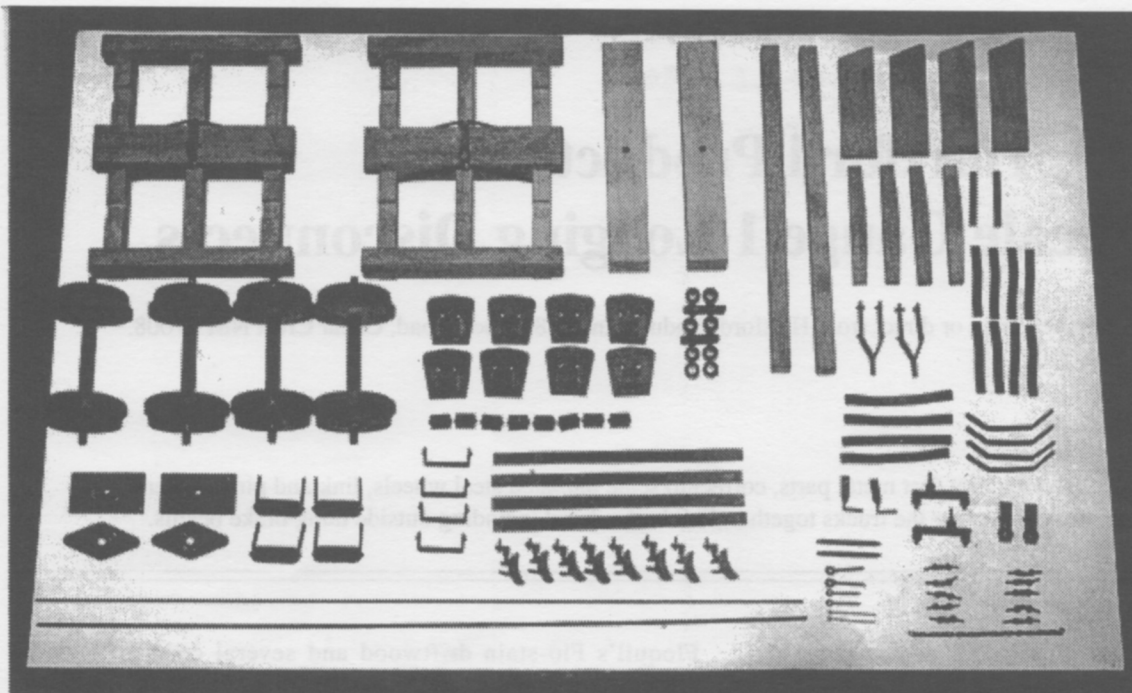
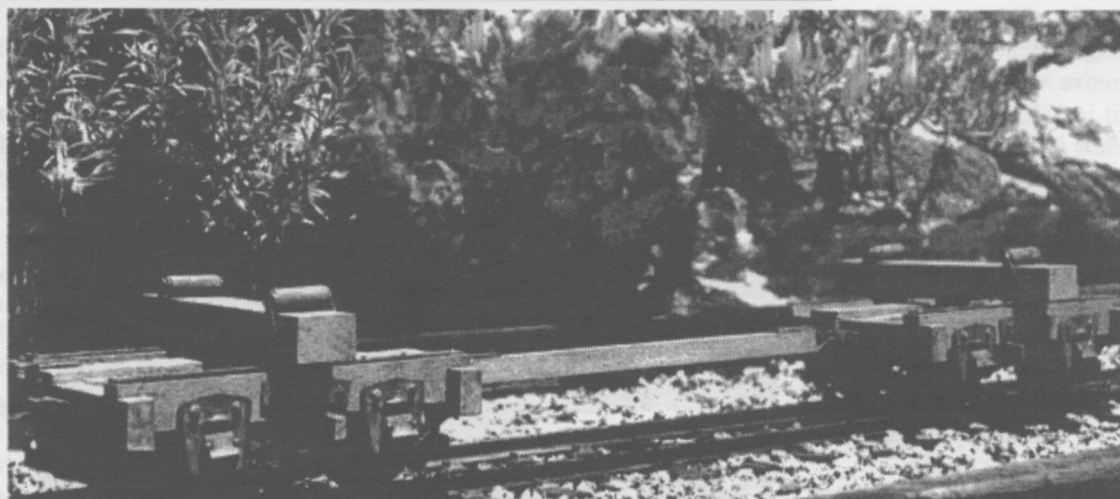
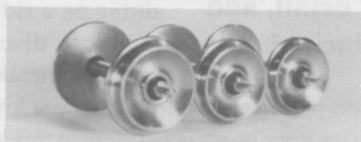


Photo left: All the bits and pieces in the *Hartford Products Inc. Logging Disconnects* kit neatly displayed before final assembly. Notice that the author has painted and weathered all the detail parts prior to assembly. This makes life much easier for the builder.

Photo right: Both disconnects joined with a "rooster". A string of these disconnects behind a logging locomotive makes for an impressive sight.



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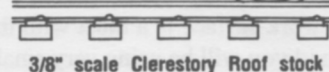
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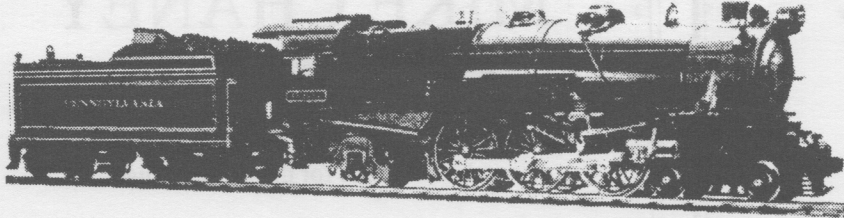


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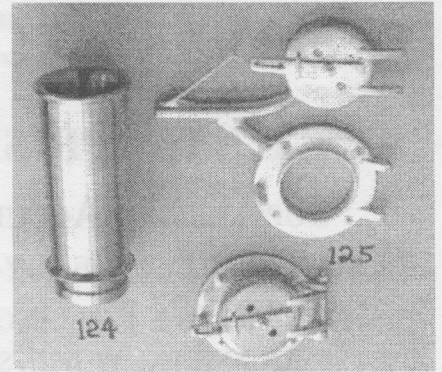
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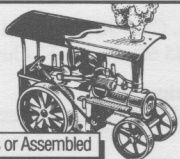
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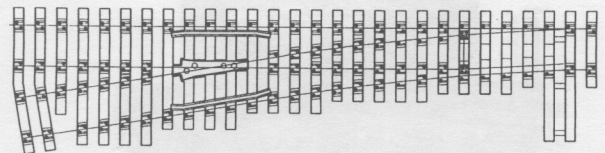
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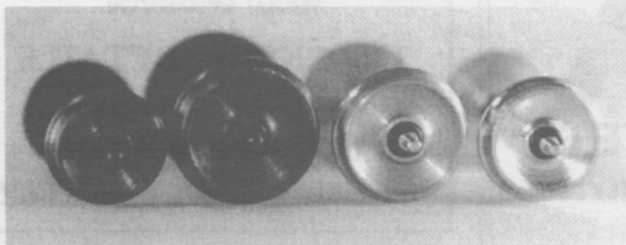
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AN ALTERNATIVE FUEL FOR THE ASTER C & S MOGUL...

AND OTHER BUTANE FIRED LOCOS

text, drawings and photos by Larry Bangham

Sometimes it is important to develop alternatives, especially for something that is absolutely essential to your well being. For example, have you ever been caught short on butane and gone to your local supplier, only to find out he's temporarily out of stock?

From what I have been able to gather, the main use for butane in the USA today is as an additive in propane to increase the BTU's. Other minor uses are for cigarette lighters, log lighters, small torches, old camping stoves and portable hair dryers. The demand for firing small locomotives must be microscopic when compared to the above uses. If cigarette smoking diminishes and the old camping gear wears out, things could really get tough.

After realizing my dependency upon this precarious situation I thought I would stock up on a good supply, then calculated that at the going drug store price it would cost over \$35.00 per gallon. My next move was to try and locate a source for bulk butane. So far this has been a futile effort. Unless, of course, I'm willing to deal in tanker truck quantities. I am still looking for a source willing to deal in 5 gallon quantities. If any of you have information on a source, I would appreciate a call. Anyway, in the meantime I decided to try an experiment with propane.

I had been warned against using this gas because the burner was not set up for it. That may be true, but what doesn't work for one application may work fine for another. Anyway, there is nothing like first hand experience. So, after a trip to the local auto parts store for some small hose and fittings, and some surgery on an old soldering torch, I was ready for a tryout on the treadmill. Lo and behold -- the engine fired up beautifully. The valve modulation was a little on the sensitive side, but it was workable.

Propane burns with a lower energy output than butane so it is necessary to run

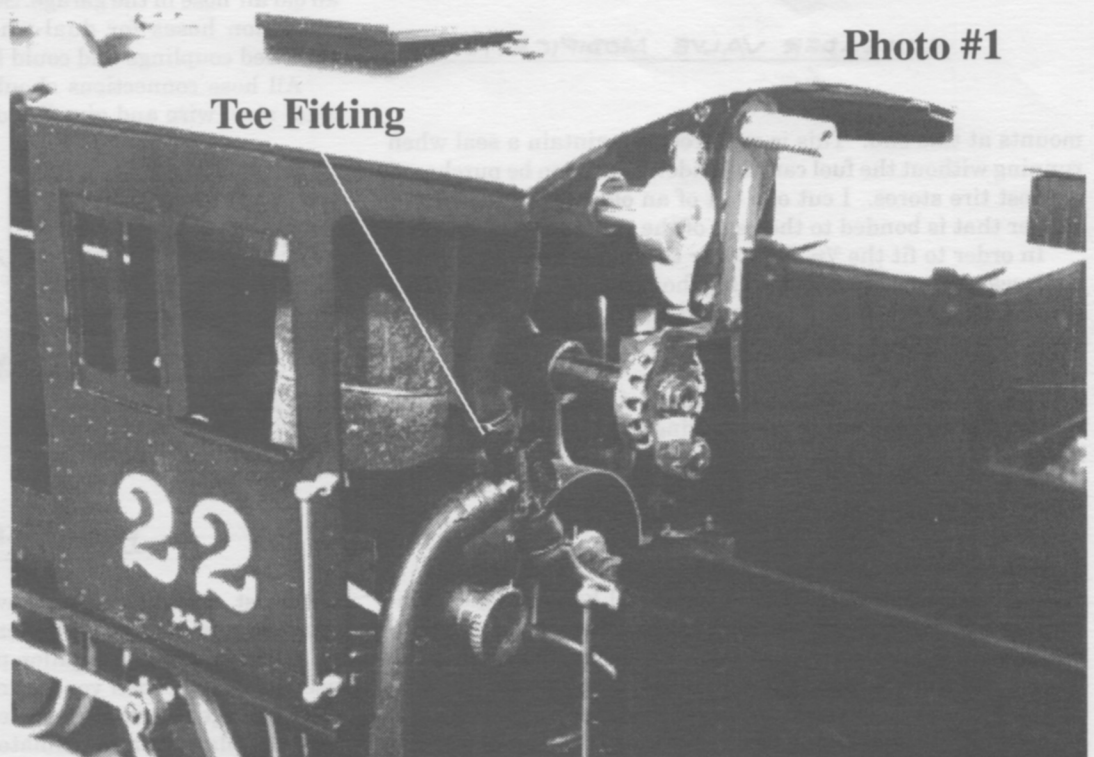
a higher burner pressure to maintain the same heat. There is also more than enough pressure to blow out the fire and fill your smoke box with explosive vapor, so you have to run at the low end of the valve range. The higher pressure creates more burner noise which is a definite disadvantage. Another disadvantage is the necessity of running a dedicated car to carry the propane tank. However, there are many other good uses for such a car.

The dedicated car is required because propane has a higher vapor pressure (the pressure in a closed container when boiling ceases at a given temperature) than butane, so storing the liquid in the tender is out of the question, unless you like to live dangerously or want to replace the tank. I did not wish to replace the tank, nor did I want to change

fuels. I just wanted an alternative.

So if you are willing to overlook these inconveniences, then you can run a fuel that is always available and at a fraction of the cost of butane. It is ideal for running your engine while performing many construction and maintenance tasks on the railroad, as it provides you with unlimited running time. Now

"On the subject of burner noise, I recently installed a turbulator from Kevin O'Connor's 'S' Street Unit Shop, and the thermal efficiency was increased to the point where running on propane resulted in about the same or even lower burner noise than when previously running on butane. So this modification is highly recommended."



you can save the precious stuff for running light or showing off to your friends. With the propane tank hooked up you can run either butane or propane, or both at the same time if you want to, simply by turning a valve. Still interested? Read on!

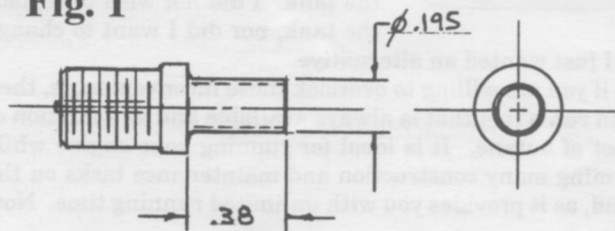
ENGINE MODIFICATION

This modification is for the Aster C & S Mogul, but could very well apply to any butane fired engine. To determine if your burner will operate on propane, hook up a temporary hose between the burner and a propane bottle. Fire it up and listen. Start off very low, then vary the valve setting and see how the burner responds.

The only modification to the engine is the addition of a "Tee" fitting in the burner hose. Locate the hose between the gas control valve and burner. Approximately midway install a $\frac{1}{8}$ " plastic vacuum line Tee (see Photo #1). I replaced the existing hose with new $\frac{1}{8}$ " i.d. neoprene. It is easier to work with new material. The hose and Tee were picked up at Pep Boys here in Southern California, but they can be found at most automotive parts stores. Another length of $\frac{1}{8}$ " hose occupies the third leg of the Tee, exits the rear of the cab and swings under the tender.

I used a length of $\frac{5}{32}$ " o.d. brass tubing to continue the line under the tender. It tucks up close to the floor on the left side, and is tied to the water supply line in two places. A short piece of $\frac{5}{32}$ " i.d. hose attaches to the rear of the brass tube and comes out under the rear of the tender. The Schrader valve (tire valve)

Fig. 1



SCHRADER VALVE MODIFICATION

mounts at this end. This is required to maintain a seal when running without the fuel car. Schrader valves can be purchased at most tire stores. I cut one out of an old tube. Remove the rubber that is bonded to the rear of the valve.

In order to fit the $\frac{5}{32}$ " tube over the end of the valve it will be necessary to turn it down and shorten it (see Fig. 1). This can be done with a drill press and file if you do not have a lathe. Not all valves have the same i.d. so check the wall thickness as you are working.

I filed a notch in the rear end beam of the tender to let the hose exit at a better angle. If changing the sheet metal on your Aster makes you cringe, you can forget this step.

TORCH MODIFICATION

I used a Weller 2500 degree Propane Torch Kit. However, if you can find a brand with a brass control knob the modification may be easier. It is necessary to shorten the burner tube and adapt it to accept the $\frac{5}{32}$ " i.d. hose. When you remove the burner be careful to retain the jet which is secured in the tube by the burner. I cut the tube off $\frac{5}{8}$ " from the valve body and threaded it $\frac{5}{16}$ -24 to match a hose nipple I had on hand (see Fig

2). Small hose nipples can be found at most automotive stores. By inverting the tube during cutting and de-burring, you can keep most of the debris out. Swab the tube carefully and plug it before threading. After completing this operation connect it to the bottle and give it a couple of blasts to blow it clean.

The valve knob needs to be extended to make it accessible from outside the car. The plastic knob on the Weller Kit is molded onto a spline and about the only way to get it off is to cut it with a hack saw and break it off. A piece of $\frac{1}{4}$ " i.d. brass tubing will fit tightly over the valve shaft. I pinned the tube to the shaft with a $\frac{1}{16}$ " dia. roll pin and soldered a brass control knob to the top of the tube. Roll pins are available at most tool or hardware stores.

Install the jet into the end of the burner tube and secure it in place with the threaded nipple. I used teflon paste to seal the thread. If you can't find a hose nipple and you don't have a lathe, you could leave the jet out and solder a piece of $\frac{3}{16}$ " o.d. brass tube into the burner tube and install the $\frac{5}{32}$ " hose on that. The jet seemed to improve low flow modulation but is not absolutely essential. Don't let the valve body get hot during the soldering operation. Use a big iron and don't dwell on it.

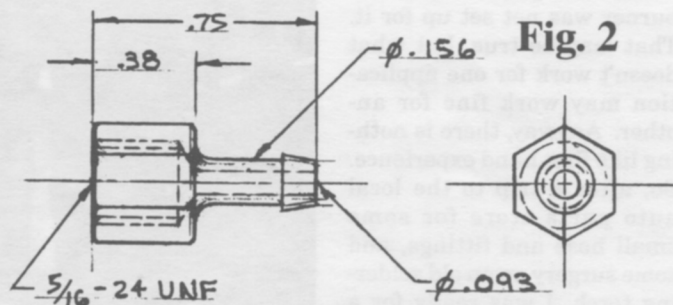
FUEL CAR INSTALLATION

I used a Bachmann Flat Car for the tank installation, but I think most car types could be used provided there is easy access to the tank.

The propane tank should be installed as low as possible in the car to keep the center of gravity down. I made two wooden cradles which were secured to the floor by screws up from the bottom. Tie down straps can be cut from a tin can or any light gauge sheet metal and screwed to the cradles. Route the $\frac{5}{32}$ " i.d. burner hose through the floor (see Photo #2) and under the car where it will need to be secured with a small clamp to keep it from interfering with the truck.

The screw on coupling for the Schrader valve may be hard to find if you don't have one laying around somewhere. I took one off of an old hand operated tire pump. I also found one on an old air hose in the garage. Some automotive stores sell small extension hoses for dual-wheel tire inflation. These have threaded couplings and could be used for this application.

All hose connections should be secured with wire. I use .015" steel wire and give it a double wrap and then pull tight



PROPANE VALVE NIPPLE

and twist, then pull up and twist again. Install the threaded coupling and you should be ready for a leak check.

If you have a 3 or 5 gallon propane tank, the type normally used for BBQ's, then you can really reduce your fuel costs. In the Los Angeles area propane sells for around \$1.65 per gallon. This translates to approximately 2.2 cents an ounce, compared

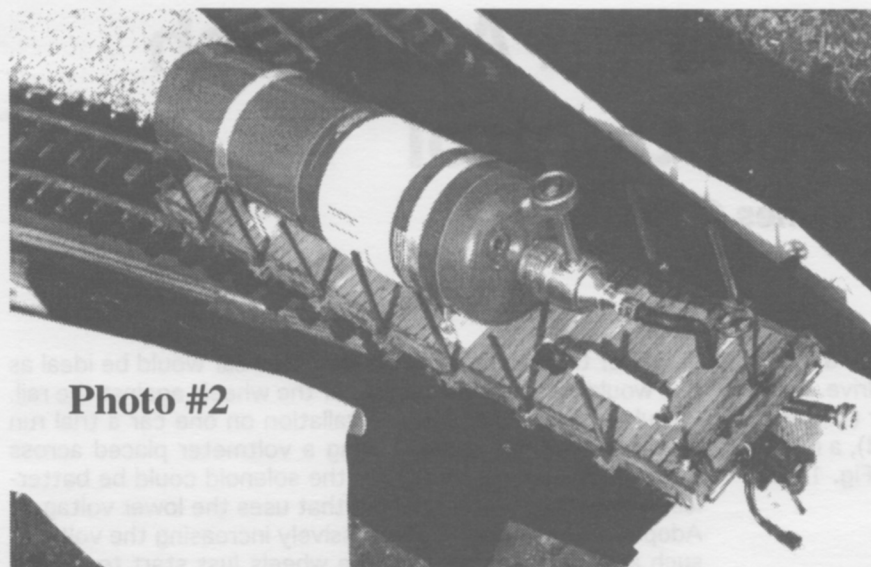


Photo #2

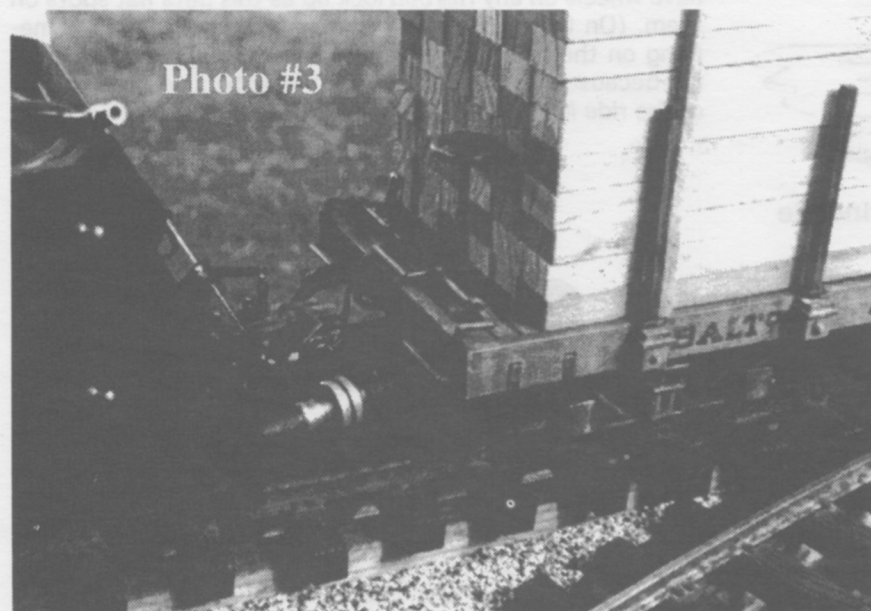


Photo #3

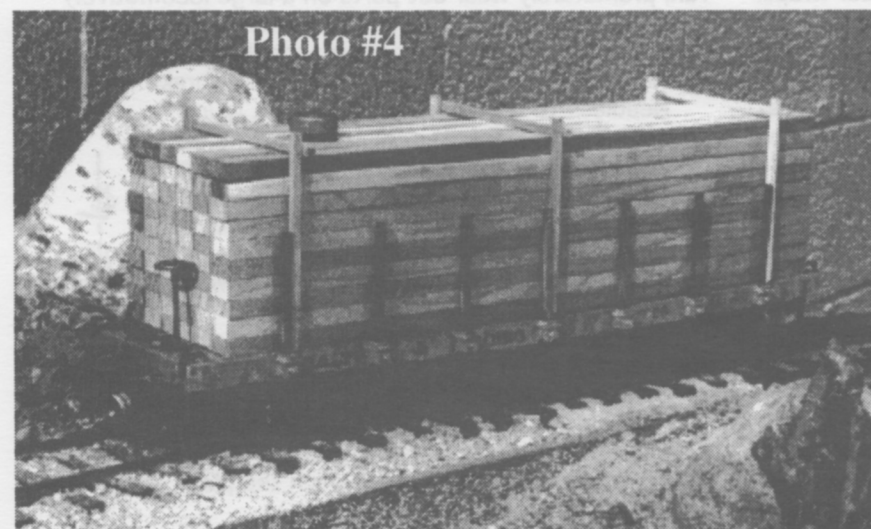


Photo #4

Photos:

#2 at top left shows the tank mounting and hose routing.

#3 at center left shows the connections to the fuel car. The wires and toggle switch on the fuel car are for the water pump power and R/C antenna.

#4 at lower left shows the completed fuel car. Note the gas valve protruding from the top of the lumber stack.

to butane at around 44 cents an ounce. It is easy to build a transfer hose so you can replenish your 14 oz. bottle. While it is illegal to transport refilled bottles, I am not aware of a law against refilling bottles for home use. There may be differences in state laws, so check it out in your state. The danger in refilling bottles, other than the fact that you are dealing with a hazardous material, which you are doing every time you fill your butane tank, is in not leaving enough air space for fuel expansion. An overfilled bottle could vent out of the safety valve due to pressure changes during transportation, creating a hazardous condition. I don't think this is a problem for outdoor use on your railroad, but one way to avoid overfilling is to weigh your fresh bottle, mark the weight on the bottle and stay under that weight when refilling. When transferring from one bottle to another, the exchange ceases when the pressure becomes equalized. However, a 20° or 30° temperature differential between the supply and the receiving bottle can result in a 4 or 5 oz. transfer in a very short time.

If you own a propane BBQ and camping stove or lantern, you probably have most of the fittings required to make a transfer hose. These fittings can also be purchased at most RV stores.

WHAT'S NEXT?

With 14 oz. of propane behind your engine, running out of fuel is the least of your concerns. So how about an inexpensive way of providing power to run your existing tender mounted water pump while you are underway? And then, how about a functional water tank alongside your track that will hold distilled water, still sealed in the plastic bottle, with a real down spout for filling up your tender? If there's any interest, these will be subjects for future articles.

It's up to you, readers! If you want to see more articles on these topics, let us know by phone, fax, e-mail or snail mail. - ed.

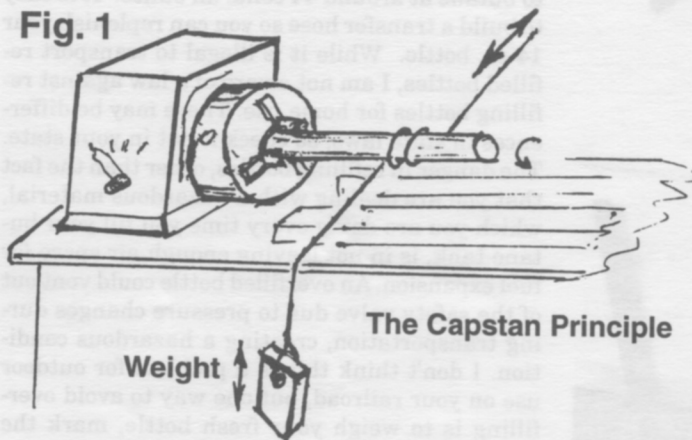


Braking - a Different Approach to Speed Control

by James C. Newton

The following is a very easy way to add a brake to a model railroad car. It uses a principle called the capstan drive. It can be demonstrated by using a lathe or a drill motor (fastened to a table), a polished metal shaft (steel preferred), a length of twine and a weight. The setup is illustrated in Fig. 1. The

Fig. 1



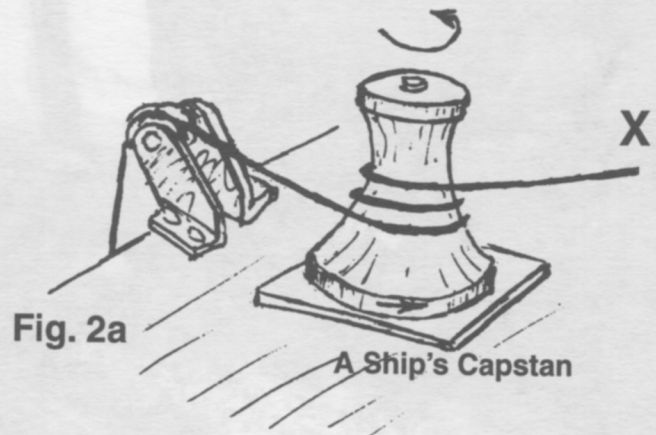
stock for this kind of stuff. A weighted car would be ideal as this would increase the friction of the wheels against the rail. I would suggest that after installation on one car a trial run be made (without engine) using a voltmeter placed across the coil. The power source for the solenoid could be batteries, and I would pick a solenoid that uses the lower voltages. Adopt some method of progressively increasing the voltage, such as a rheostat, so that the wheels just start to slip, or brake. Make note of this voltage and plan on using approximately 20% less in actual operation. It is important not to have wheels on any railroad lock up as this puts flat spots on them. (On the big steam engines, outside of hitting something on the track, sliding the drivers would have to be Sin #2, because afterward a vibration would be a permanent part of the ride in the cab. The only solution would be to remove

lathe is at first turned to one of the slower speeds and one wrap or turn is wound around the mandrel, the weight being attached. Pull on the loose end and the turning of the mandrel (or shaft) will lift the weight. Releasing the loose end will allow the weight to drop. Next, wrap two turns around the mandrel and pull the loose end again; this time you will notice that the effort is much less as you are now using the rotating force of the mandrel to assist in lifting the weight. Releasing the loose end again allows the weight to lower. Repeat using three turns around the mandrel, this time being careful that the twine will release; it may not do so easily on four wraps.

Fig. 2a shows the capstan on the deck of a ship. It is turned by shafting from the engine under the deck. The rope, for instance, might be pulling up a box or an anchor. Likewise, instead of the rope going over the side it could just as well be pulling some heavy load across the deck. When the sailor releases the rope, held at X, the load stops moving. So what we have here is a mechanical amplifier or servo mechanism, the real power being supplied by an engine and the control by the person.

Fig. 2b shows a capstan as used on radios that have a dial cord. In this case both ends are held taut and the cord does not move off the end due to the larger diameter which always centers the cord. The capstan is the moving force, and it is mounted on a shaft hooked to a knob at the front of the radio.

Fig. 3 shows the application of the capstan to a simple form of brake which is ideally suited to gauge 1 and gauge 3 as there is plenty of room on the under side of our rolling



the "tires" and retread with new. Vibration would, in the long run, prematurely wear out parts on a large locomotive.)

Referring to Fig. 3, the spacing between the truck and the solenoid should be as long as is practical so that the rotation of the truck on its axis does not cause the brake to engage.

Needless to say, a plastic axle isn't going to last very long. Polished steel is the best.

Instead of twine use a fine weave cable which will also assist in releasing the brake. The number of turns for best operation will have to be determined for each application.

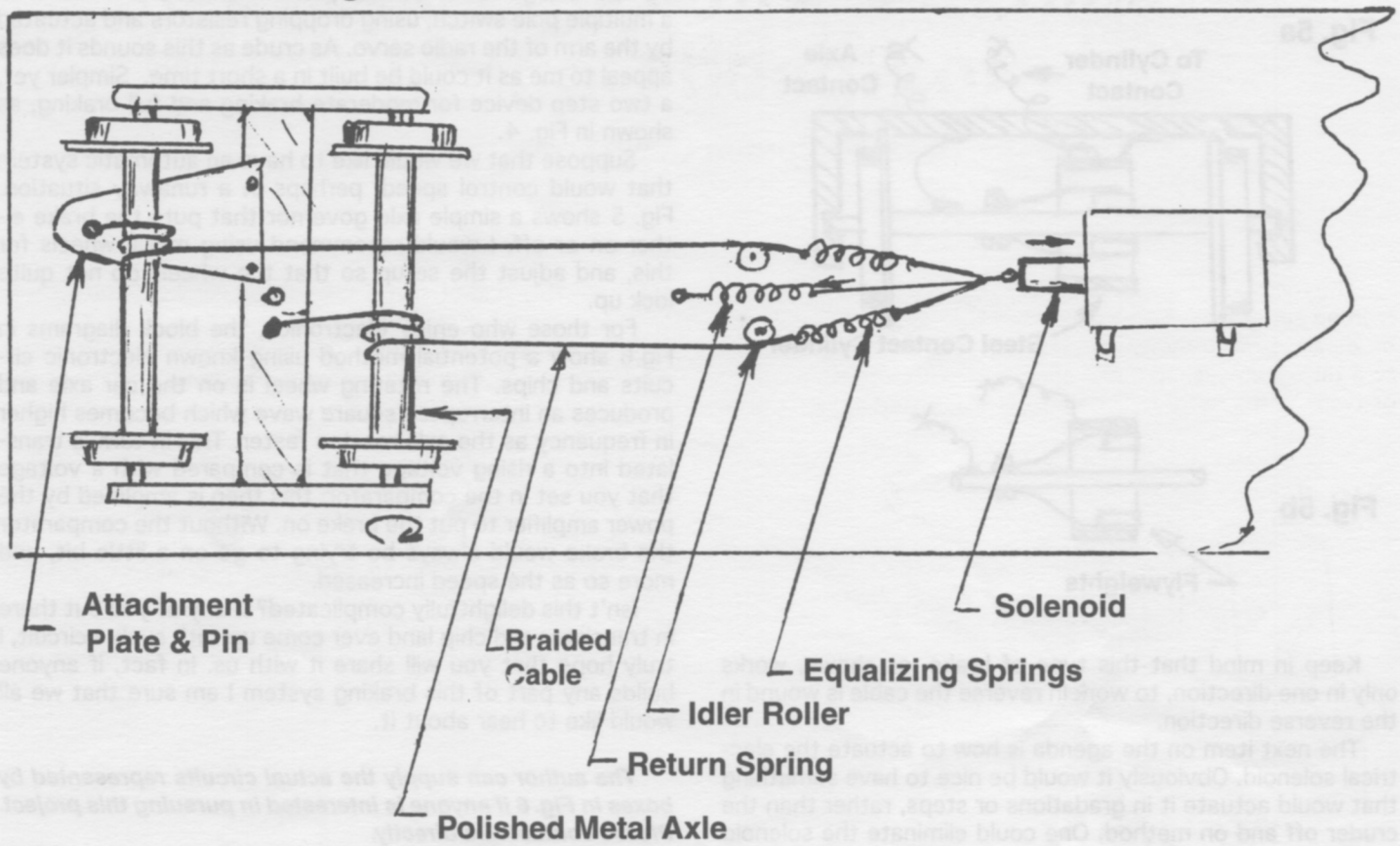
A light oil sparingly used may help cut wear but also may pick up road dust.

The question might arise as to why not use the classical capstan as in Fig.2b. There is no reason not to use it, except that it adds a complexity. The wheel & axle would have to be disassembled to install it, and really its only function is to centralize the cable, which the plain axle will do anyway.



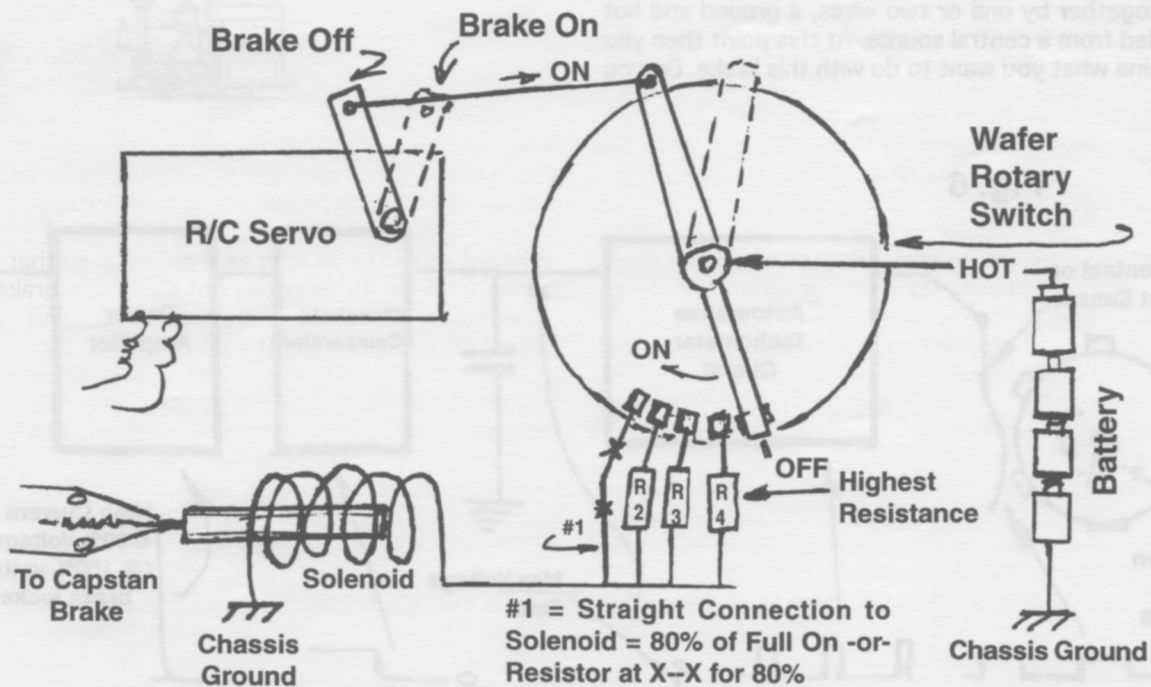
Fig. 2b

Fig. 3



Capstan Brake on Underside of Car

Fig. 4



Governor Speed Control

Fig. 5a

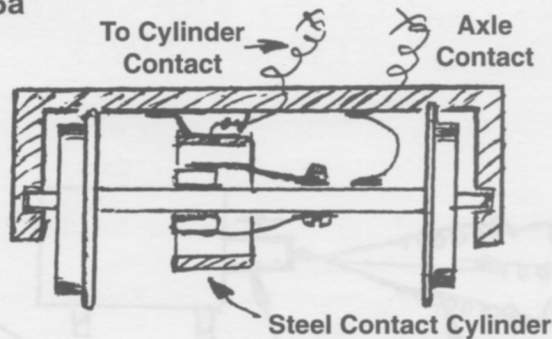
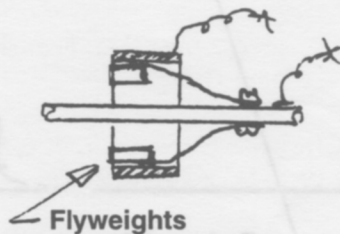


Fig. 5b



Keep in mind that this type of brake, as shown, works only in one direction, to work in reverse the cable is wound in the reverse direction.

The next item on the agenda is how to actuate the electrical solenoid. Obviously it would be nice to have something that would actuate it in gradations or steps, rather than the cruder off and on method. One could eliminate the solenoid and use the servo of a radio control unit but then this might necessitate a servo on each car—somewhat expensive. Another method might be a variable pulse-width device such as could be engineered from a 555 chip, if you enjoy doing that type of engineering.

To start with, if solenoids were used they could be powered from one central source, an on board battery box, each car hooked together by one or two wires, a ground and hot wire, controlled from a central source. At this point then you must determine what you want to do with this brake. Do you

want remote control or do you want automatic control, say, for speed regulation? The simplest remote control would be a multiple pole switch, using dropping resistors and actuated by the arm of the radio servo. As crude as this sounds it does appeal to me as it could be built in a short time. Simpler yet, a two step device for moderate braking and full braking, as shown in Fig. 4.

Suppose that we would like to have an automatic system that would control speed, perhaps in a runaway situation. Fig. 5 shows a simple axle governor that puts the brake either on or off. I would recommend using metal wheels for this, and adjust the setup so that the wheels do not quite lock up.

For those who enjoy electronics, the block diagrams in Fig. 6 show a potential method using known electronic circuits and chips. The rotating wheel is on the car axle and produces an interrupted square wave which becomes higher in frequency as the axle rotates faster. This in turn is translated into a rising voltage that is compared with a voltage that you set in the comparator; this then is amplified by the power amplifier to put the brake on. Without the comparator the brake would always be trying to go on a little bit, and more so as the speed increased.

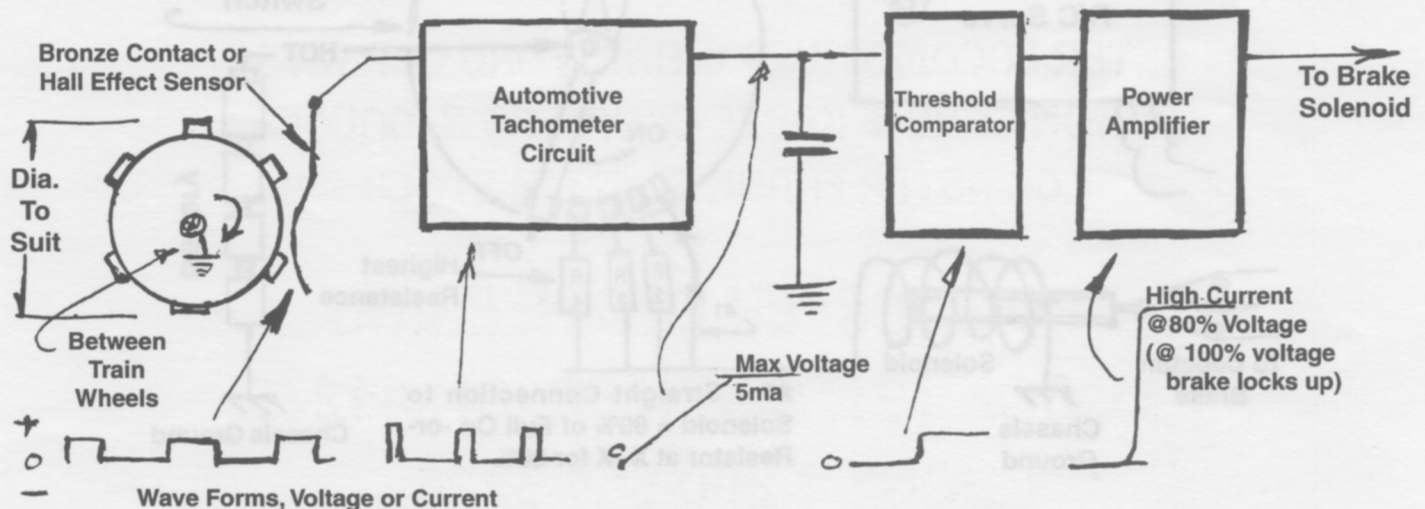
Isn't this delightfully complicated? If any of you out there in transistor and chip land ever come up with such a circuit, I truly hope that you will share it with us. In fact, if anyone builds any part of this braking system I am sure that we all would like to hear about it.

The author can supply the actual circuits represented by boxes in Fig. 6 if anyone is interested in pursuing this project. Please contact him directly.

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Fig. 6





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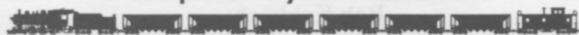
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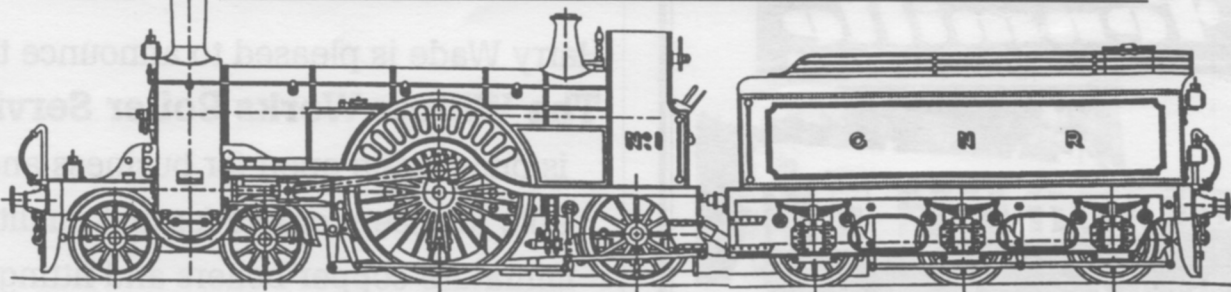
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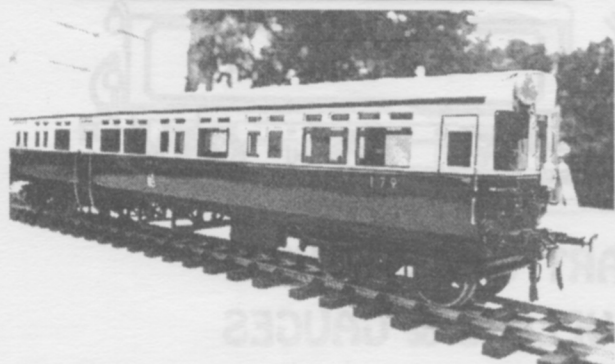
I've been considering expansion of my tiny 32mm (gauge 0) garden line for some time now. However, I've been in a quandary about whether to abandon 32mm and make the change to the more popular 45mm (gauge 1) so others can run on my line -- or to expand in 32mm because I prefer the diminutive gauge and the friendly little lokies that run on it more than the "wide gauge" equipment of 45mm.

Ongoing discussions with Fred Kuehl and Ron Brown convinced me not only to stay with the 32mm gauge and equipment, but also encouraged me to initiate some form of contact and discourse among other 32 millers in North America. I think we can all benefit from one another's enthusiasm and expertise and, to that end, I'd like to send to other 32 millers a survey questionnaire for them to fill out and return. I intend to distribute the compiled results to all respondents. So...if you're a full-time 32mm'er, a part-timer, or are just wistfully considering 32mm, please send me a stamped, self-addressed envelope and I'll see that you get a copy of the survey questionnaire.

Rob Kuhlman
1226 Linwood Avenue
Norristown, PA 19401-4211
USA

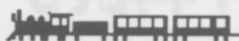
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KITCHEN TABLE FIX for Errant Asters

by Mel Ridley

drawings from the author's original sketches by Harry Wade

I have read with interest the increasing number of readers who are willing to have a go at trying to improve performance of their locos and, in so doing, being unafraid of possibly defiling an expensive investment. This has been my attitude for years – if a loco won't perform satisfactorily, then do something about it.

On taming wild Asters, the small knurled knobs so prevalent are quite inadequate to give any degree of fine control at the throttle. So, using the lever principle, we need to do something about the fulcrum. For those without a workshop, the following "kitchen table fix" is offered.

By way of example, for the Reno, Mogul, Frank S., Ali-San Shay, etc., the valve stem can be removed, the knob dispensed with and a lever fitted as per plan 'A'. Some of the knobs are riveted in place, and if you're brave you can cut them off. Otherwise follow plan 'B'.

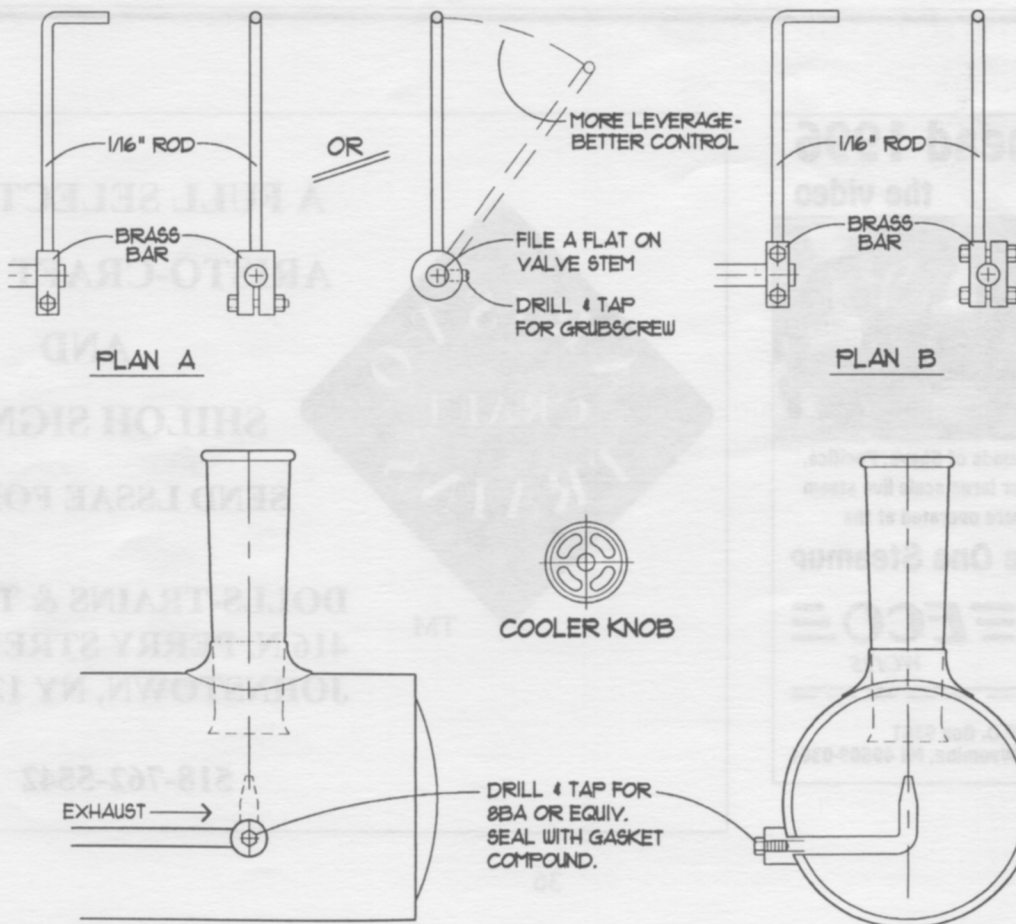
Before removing the stem, use marking ink to locate on it the best position for the regulator handle in the closed position, remembering that you need to get at it easily and not to foul other obstructions in the cab when it is opened.

The early Shay is a renowned performer, with good boiler design and plenty of steam, but seemingly more at home in the "Indy 500" than in our back yards. The regulator on this is more akin to a screw reversing lever, but can receive the same treatment as above.

For the more adept, one further improvement is to restrict the exhaust flow, and this loco was just made for it. See sketch.

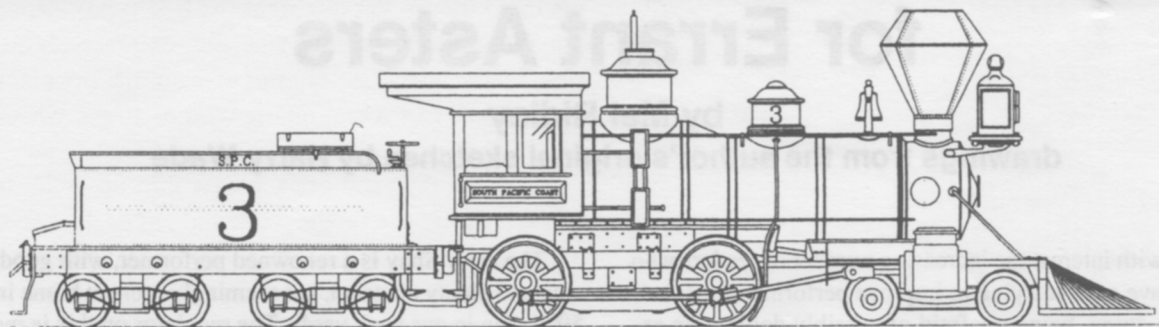
Drill and tap the exhaust manifold about 8BA where it enters the smokebox. Fit a brass screw and run the engine on the bench (one of the new treadmills would be perfect for this type of tuning/testing), adjusting as you go. But don't restrict it too much, otherwise the forced draught, and hence steaming ability, will be affected. Seal with gasket compound.

One final touch. If you don't like the look of the leftover knobs in the cab (i.e. blower valve), drill four holes around the periphery and open them out into curved slots, giving the effect of a spoked wheel. They look good and make the knob cooler.



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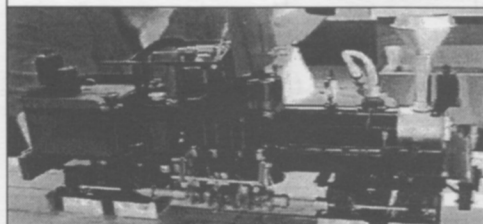
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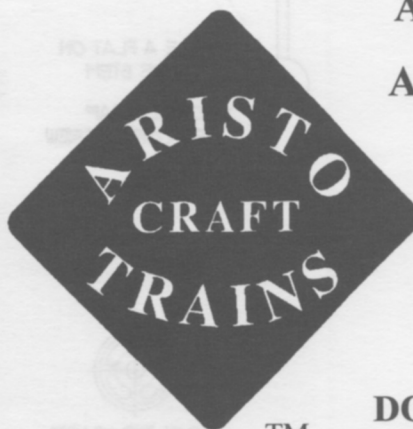
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People who have the power to make things happen don't do the things that people do, so they don't know what needs to happen.

- Russell Baker



The Old Curmudgeon

Dear Gene,

I can sympathize with your problems in laying out all the centers of those drill holes in your loco frame. I don't like marking out and I'm not very good at it. One of the many things I don't do well is get the prick punch on the point where the two marked out lines cross. Even a magnifying glass on the punch doesn't give me consistent results. Try this. Take a 1" length of 1" diameter brass and drill/ream a 1/8 hole as close to center as your

facilities permit. Put a 60 degree (included angle) point on a 1-1/4" length of 1/8" drill rod. Harden and temper the point as you would for a prick punch (it only took me three tries to get this right the first time). Mount the brass slug in the milling vise and, as precisely as possible, carve away one-quarter of it so that the resulting shape looks like a one-quarter eaten cheese wheel (see my drawing).

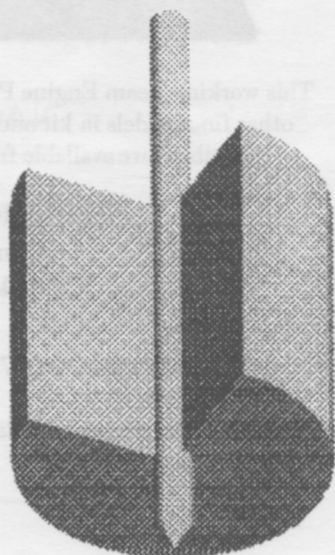
Push the drill rod prick punch into the hole. In use one sets the device on the work and aligns the two edges of the cut away portion with the (usually perpendicular) layout lines. This automatically places the prick punch over the intersection of the lines. Tap lightly with small hammer and then apply the center punch. Works for me! I've made some of these for friends as gifts and they've been well received.

Here's another neat trick. Mount an aluminum handle to a small, strong pot magnet. Pick a magnet diameter that's a nice fit in a piece of PVC tubing. Close one end of the PVC with a thin plastic cap or a thin piece of plastic cemented in place. Use this to remove ferrous chips from whatever. Once the chips are caught, hold the unit over the waste bin and withdraw the magnet from the PVC. Chips will fall cleanly away and the magnet will require no cleaning.

Keep turning - Marv



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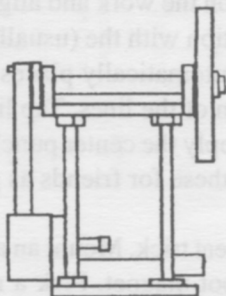
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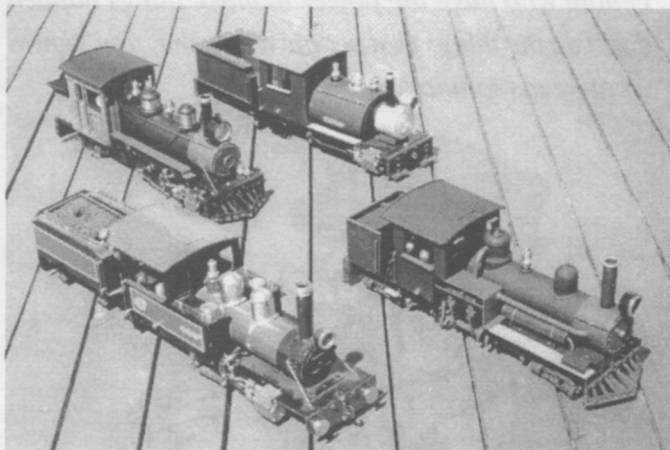
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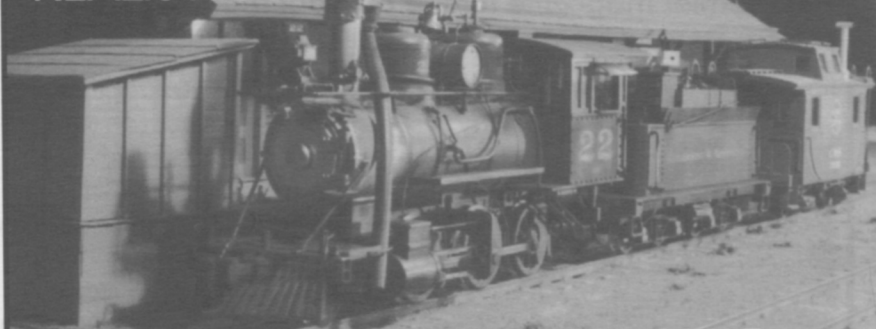
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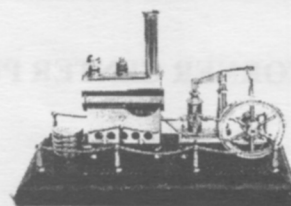


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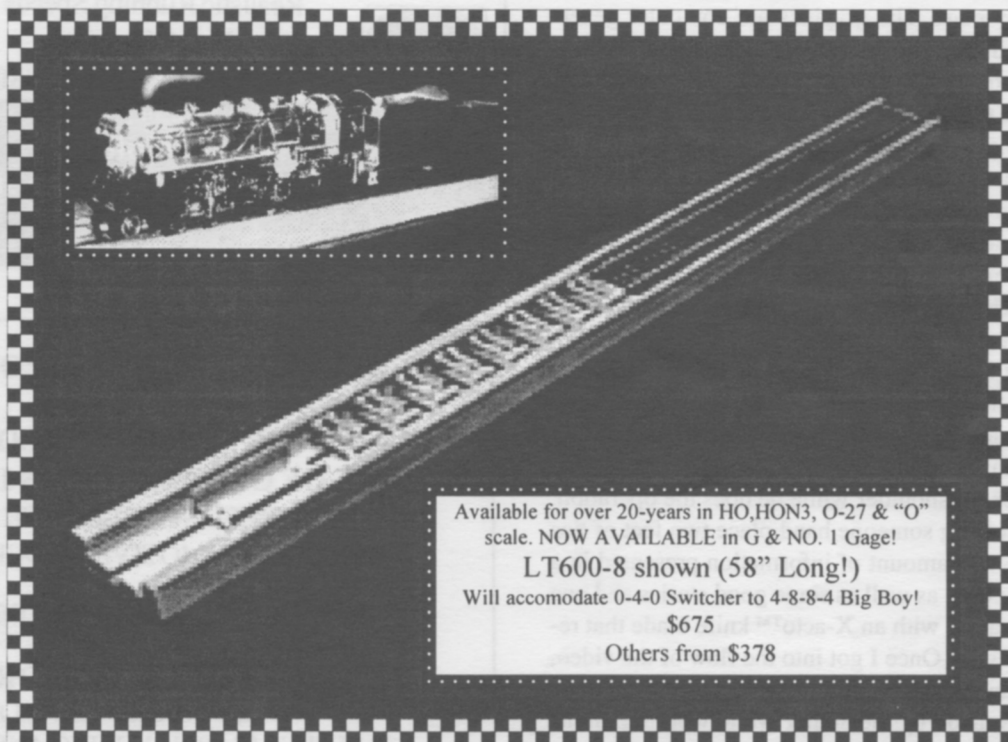
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Product Review:

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Building Turnouts is a combination of two 20 page step by step manuals and a three hour video on scratch building a stub switch and a point switch. The manuals are very similar in nature, but the differences become apparent when you compare them page by page. The graphics are computer generated, large size, and very clear as to what to do and when to do it. Some of the instructions need to be studied to get that understanding. Some terms like "frog guards" and "frog wings" are humorous and got the point across.

The manuals both have the same introduction, philosophy and general direction. Illustration 1 begins with ties, tie placement, staining, sanding, and restraining. Perhaps a little over done, but each item needs to be considered and acted on before proceeding. The illustrations that follow show you what rail to put where, and when to put it there.

After listening to the introduction on the video, and hearing the author say that most of this video would be as exciting as watching paint dry, I was a little apprehensive about sitting through a boring instructional film, but the video has you literally looking over his shoulder while he does the operation. The tedium of watching someone hand place two feet of ties is lessened by the vast amount of information presented in a warm and friendly way, as well as some good stories and one amazing demonstration with an X-acto™ knife blade that really kept me interested. Once I got into the flow of the video, I really did not want to turn it off.

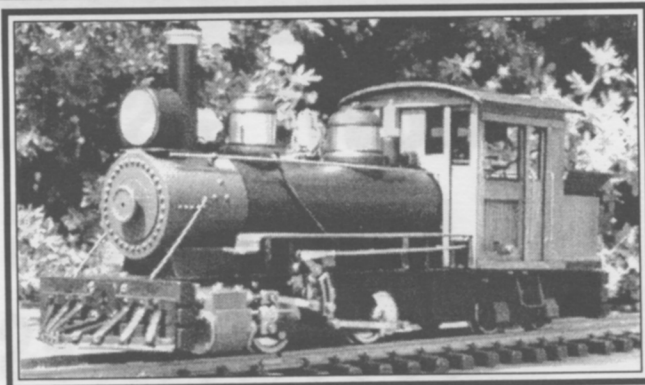
The video was made by the author while working on his layout in the basement. The occasional sound of water running and kids laughing gave the video a homey type of quality. There is no background music. Most of the general information and technical demonstrations were given in the first part, Stub Turnouts, which lasted 2.3 hours. Macro shots of soldering details were in the Point Turnout segment.

All in all, this set of instructional tools is the best demonstration on a single subject that I have had a chance to work through.

*Reviewed by Garret Wortman
Dacono, Colorado*



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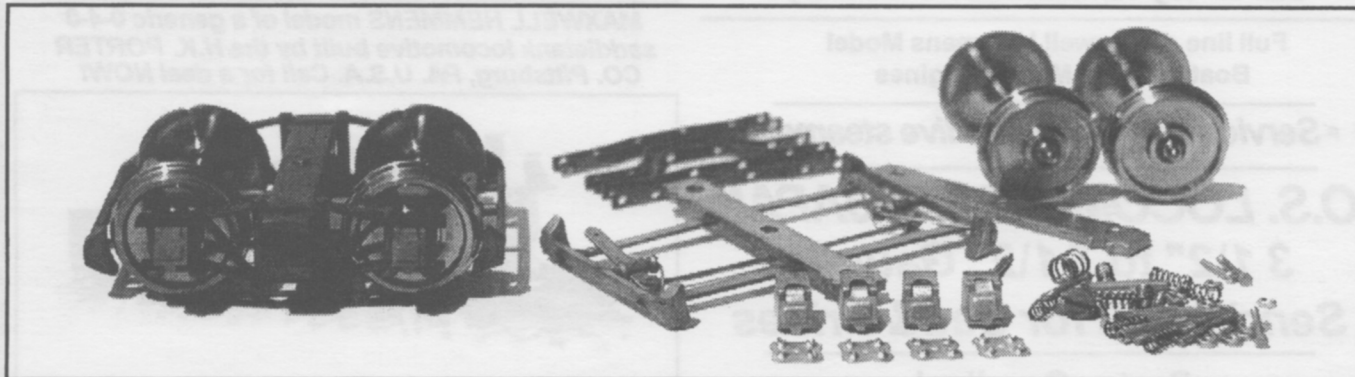


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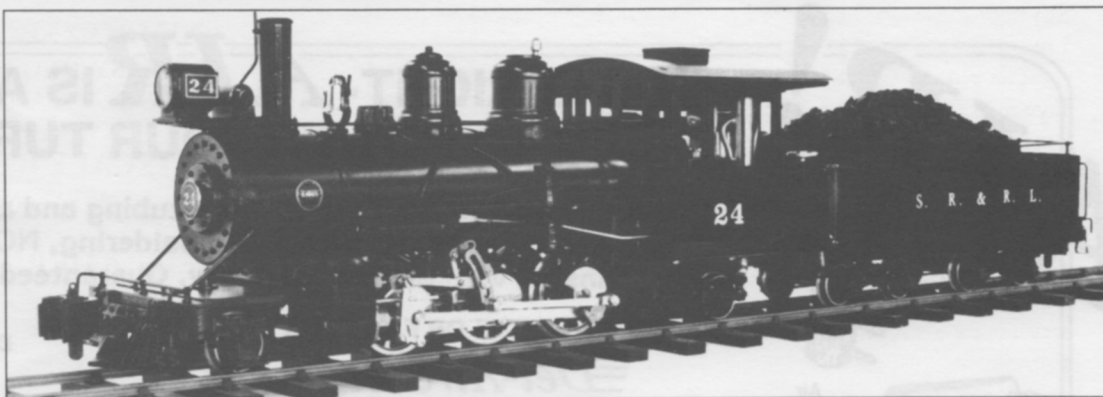


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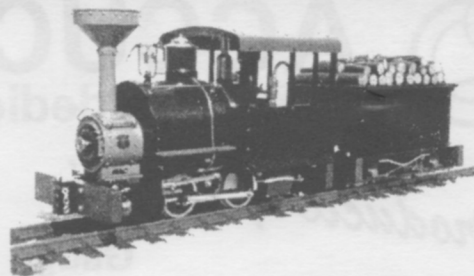
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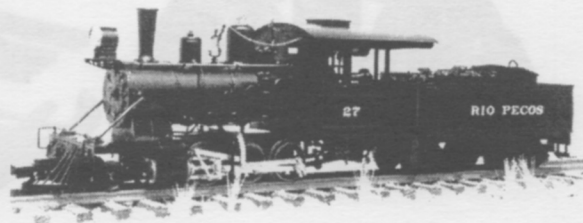
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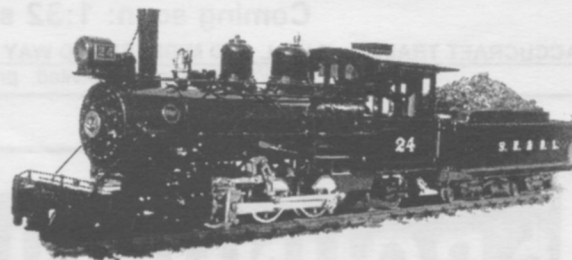
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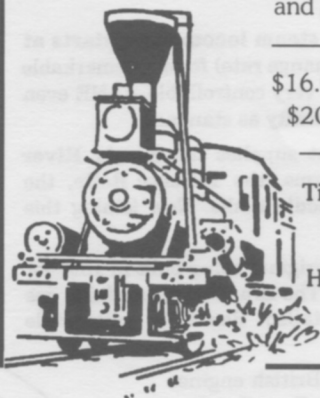
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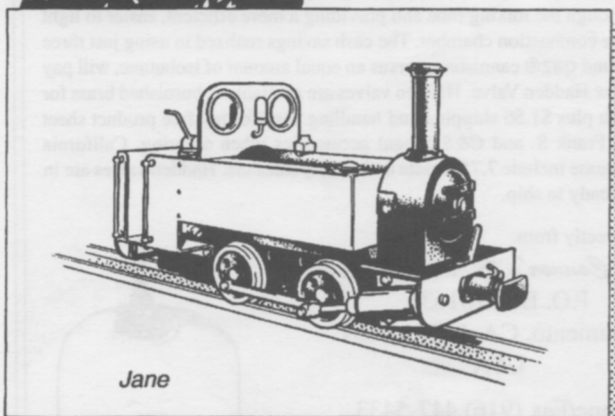
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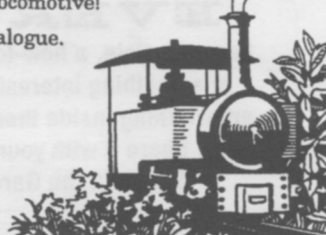
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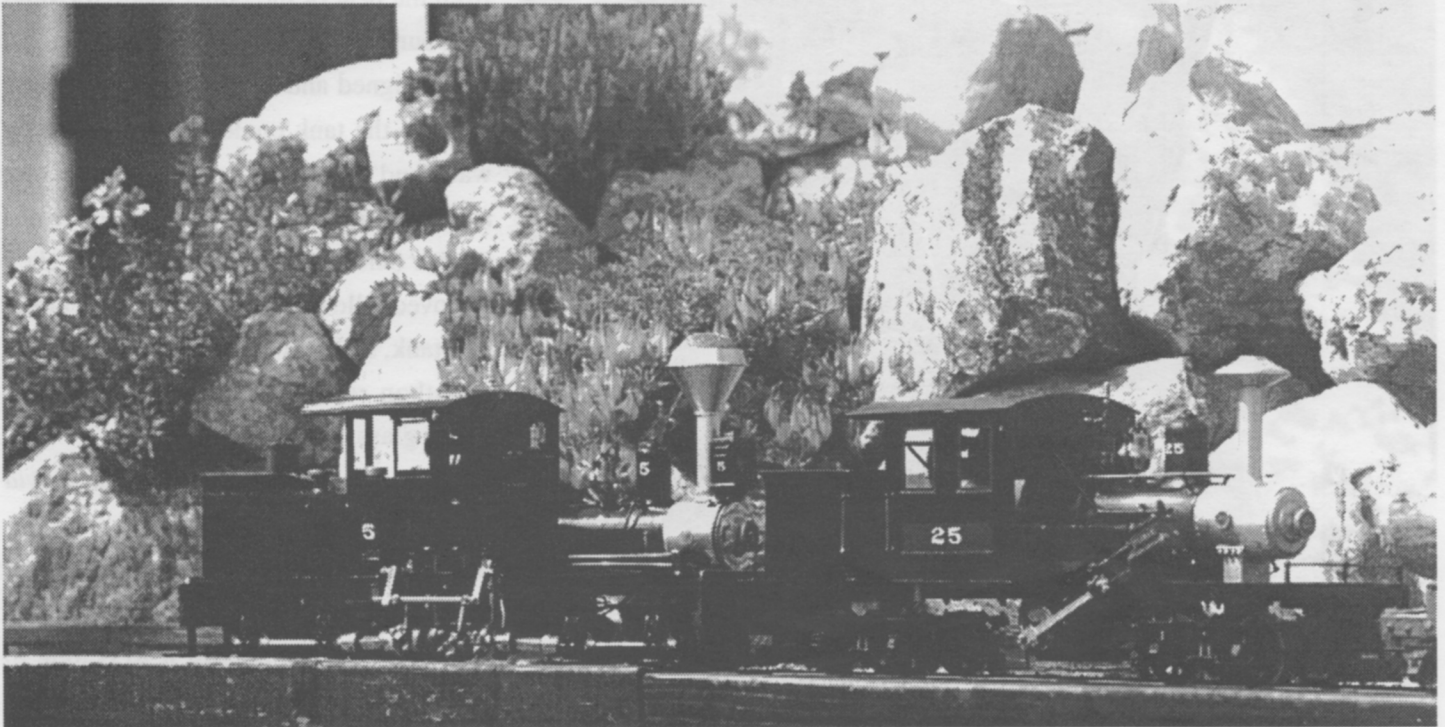
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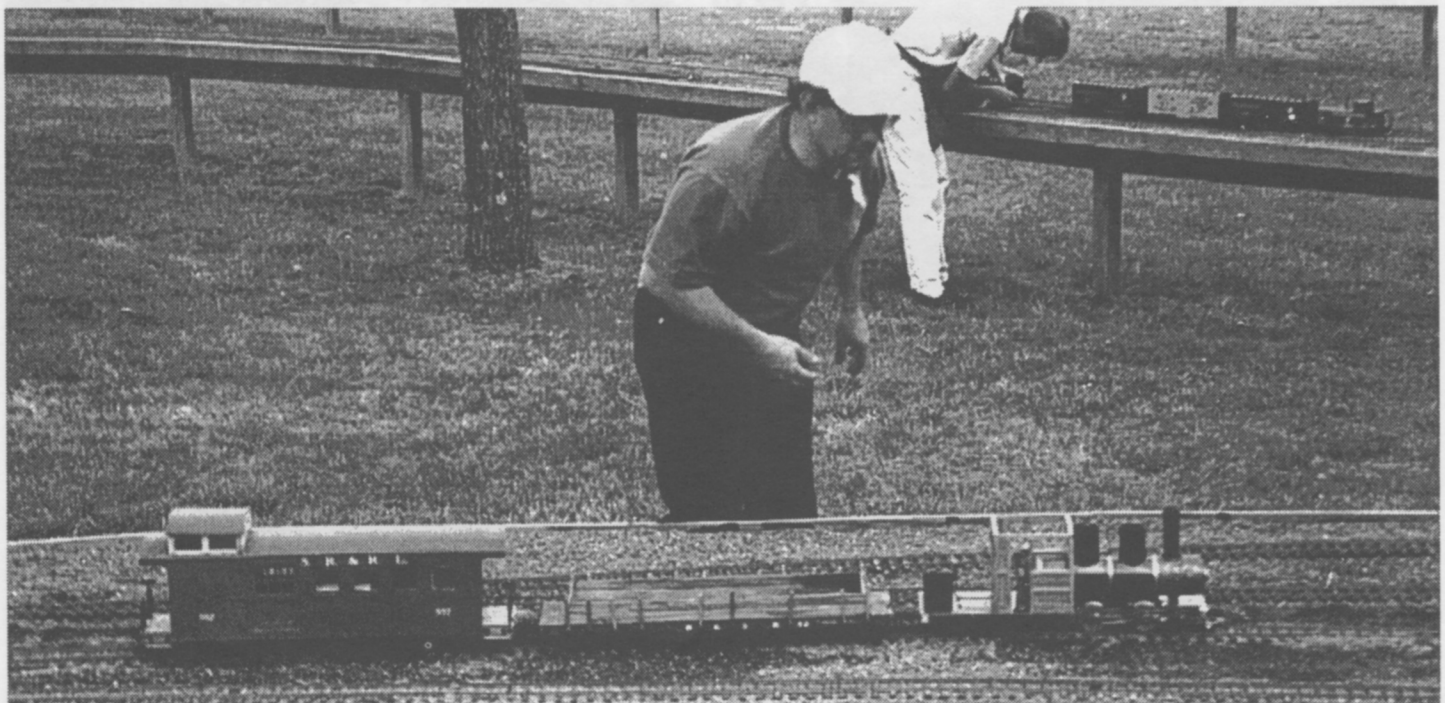
Steam Scene.....

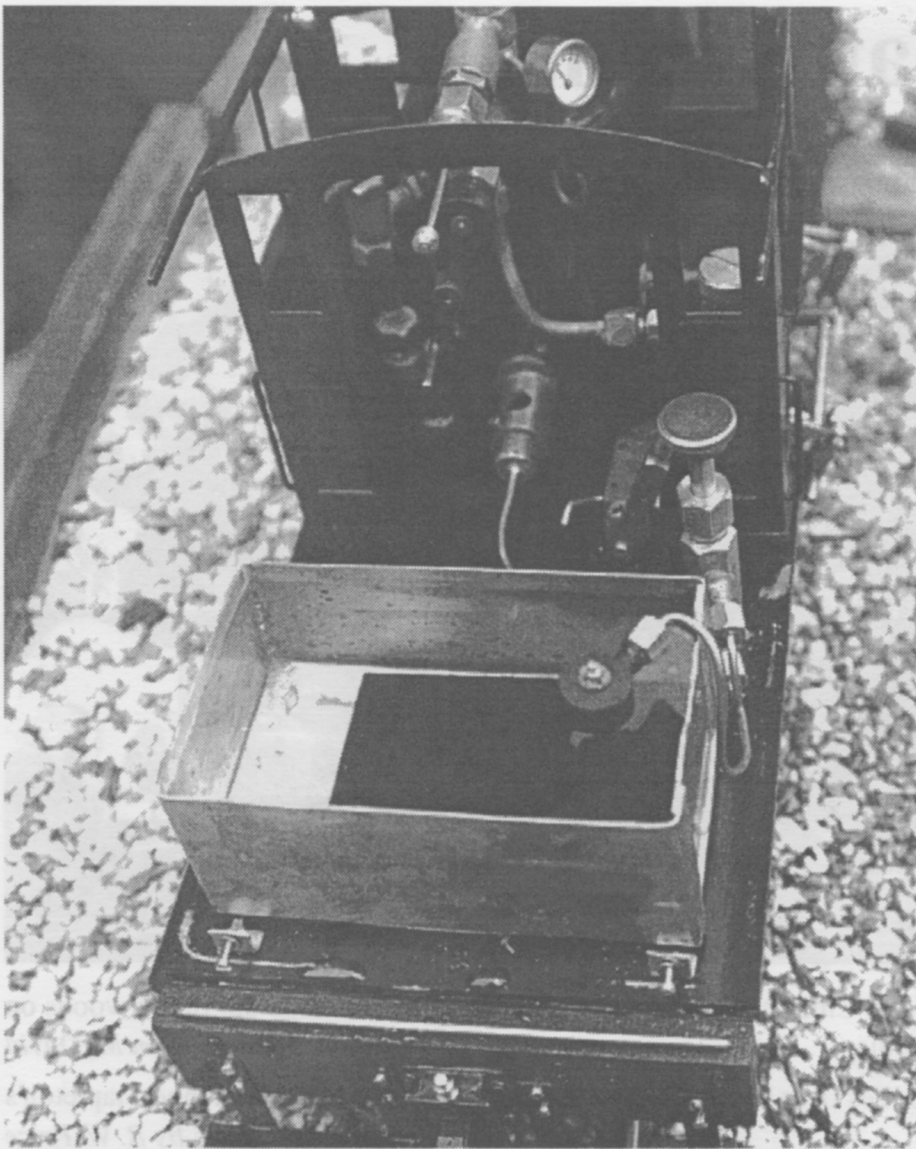
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Above: Catatonk Shay (left) and High Noon Climax double up to haul a heavy load of logs out of the woods on Jim McDavids 1:20 logging line in California. *Photo by Jim McDavid*

Below: Unidentified builder/operator watches over his 7/8" scale Maine 2-footer on Jim & Jo Anne Stapleton's Spring Steamup in northern Virginia. *Photo by R. W. Price*





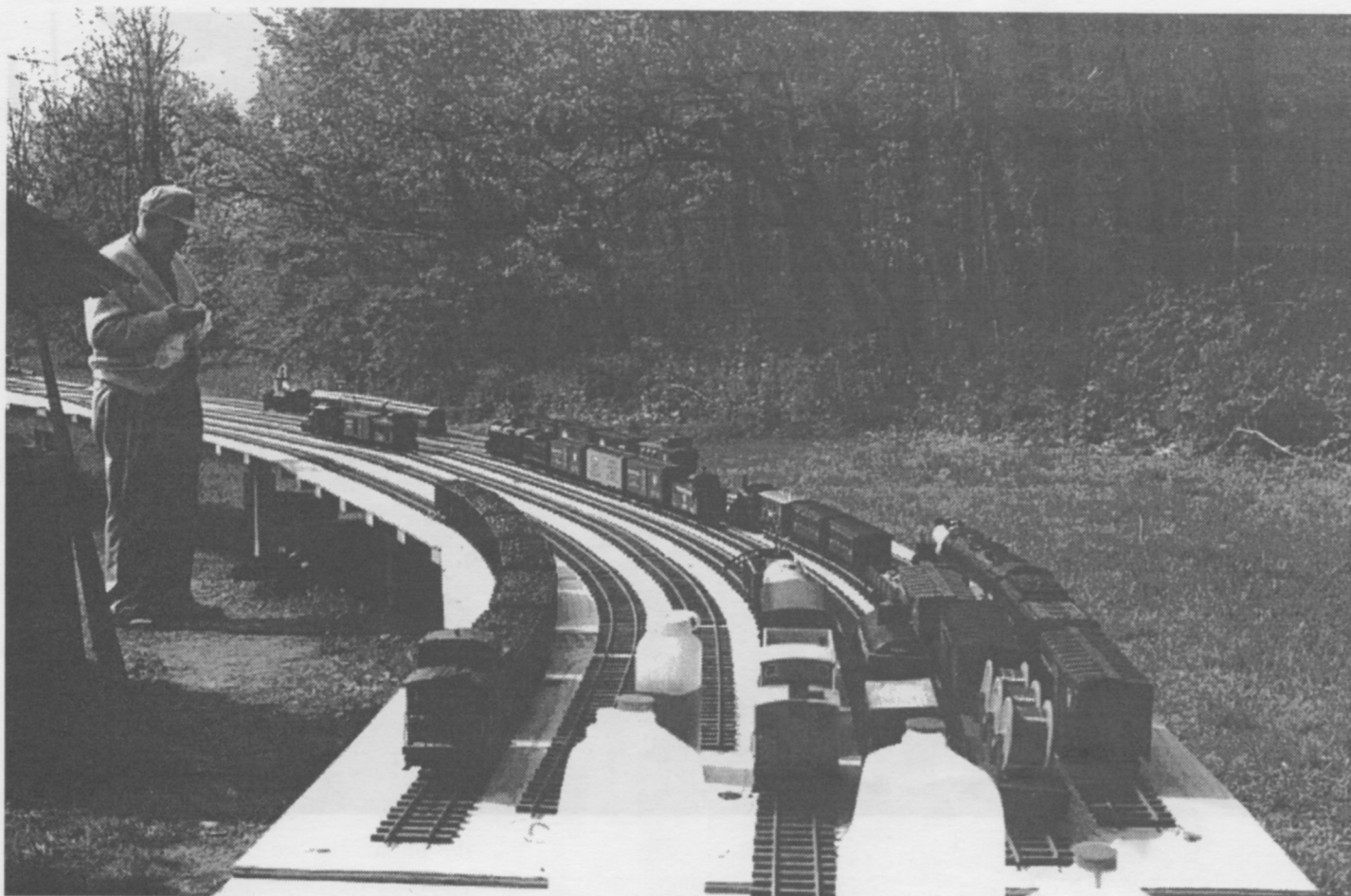
Left: For esthetic reasons, Jim McDavid wanted to get the gas tank out of the cab and into the bunker on his Catatonk Shay. No problem moving it, but getting away from the heat of the boiler made for sluggish burner performance on cool days. So Jim designed and built this copper "bath-tub", so the tank could be surrounded by water and thus maintain good gas pressure at the burner. The additional space in the bunker (shown here with the bunker shell removed) allowed for a significantly larger fuel tank, so Jim's Shay can now log some marathon runs. Better watch that water gauge glass, Jim!

Photo by Jim McDavid

Below: An Aster Big Boy in the yard at Stapleton's. No information accompanied the photo, but we believe it to belong to Dr. John Bloxdorf. Rumor has it that this engine pulled a sizeable freight train at impressive speeds on the long straights and huge, sweeping curves.

Photo by R. W. Price

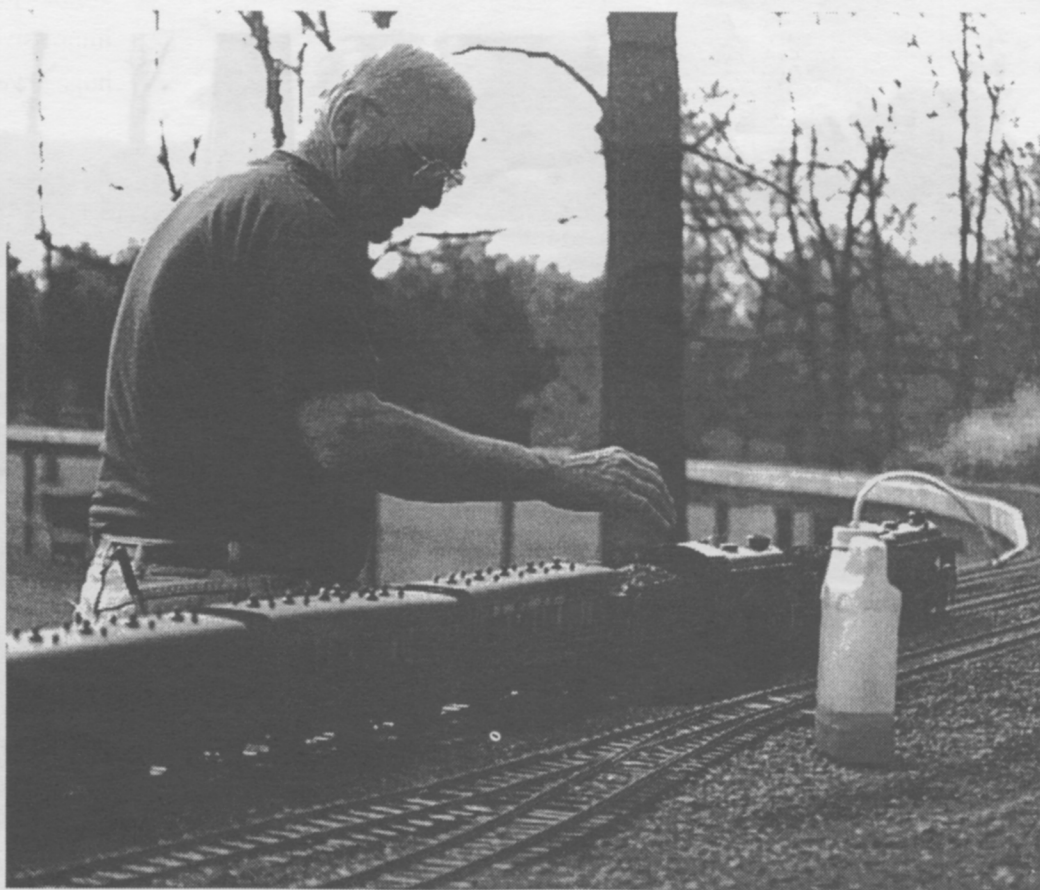




Above: Just part of the yard area on the Stapleton's huge track. You "Casey Jones" types can really haul the freight here!

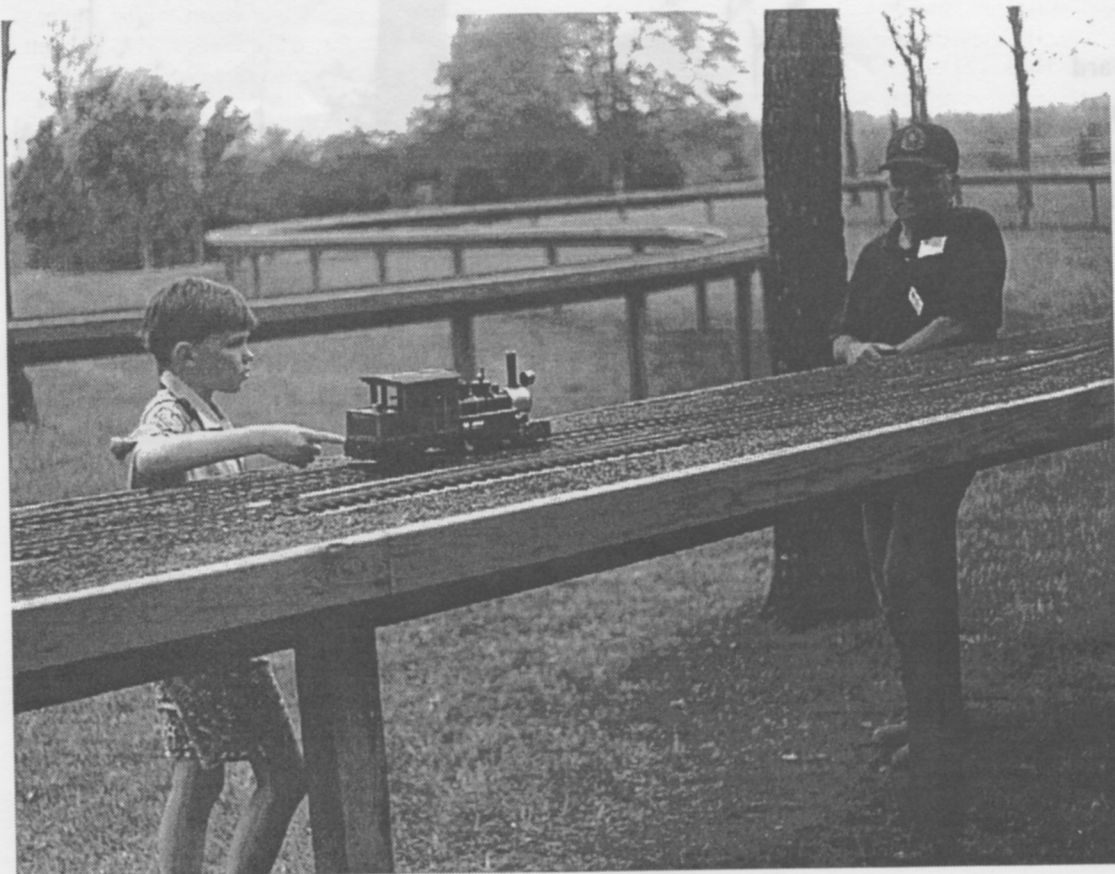
Right: Harry Quirk reaches for the throttle on the second engine in a double header as the first engine begins to move the train out of the yard and onto the main. Next stop? Only limited by your imagination.

Photos this page by R. W. Price





Above: A busy scene on the steaming tracks at the Stapleton's Spring Steamup. A wide variety of engines, rolling stock and people were taking advantage of this beautiful setting and very large track to get the winter kinks out of their equipment.



Left: Sorry to say that we don't have this young engineer's name, but isn't it nice to see some of the younger model railroaders showing an appreciation for real steam power?

*Photos this page by
Doug Smith*

End of the Line

Cover Photos

We've had some terrific photos submitted for our cover since our plea for more a few issues back. This month's cover by Jim McDavid, and our May/June cover shot by Jim Montgomery are solid proof of that. But don't stop now! We have a constant, insatiable need for those great action shots of small-scale steamers in realistic settings for use on the cover.

Don't forget that in addition to worldwide fame and your name in lights at the bottom of page 3, photographers who submit cover shots that are actually used will get a free one-year subscription to SitG.

How can you go wrong? Get down to the camera shop for some color slide film (64 or 100 speed preferred), set up a believable shot, turn your camera 90° for a vertical-format shot, and shoot away. Who knows? You might make a place for yourself in miniature steam history!

Lucky Guy!

Bernard Rich of Bloomingdale, Illinois was the lucky winner of a Maxwell Hemmens Porter live steam locomotive in a raffle drawing held by Rio-Pecos Garden Railroad Co. at the 12th National Garden



Photo by Dolores Rich

Railway Convention in Orlando, Florida. This is Bernard's first live steam locomotive and, with the assistance of some of the other engineers in attendance, he immediately learned to fire and run the locomotive successfully. We understand that Bernard was so thrilled with his new acquisition that he extended his vacation for another day so he could run the Porter.

Congratulations, Bernard, from all of us here at *Steam in the Garden*!

When we say that Bernard is a lucky guy, we don't mean just because he won a nice steam loco for the price of a raffle ticket. Yes, winning that engine was a lucky stroke that would please any of us. But we think Bernard is even luckier because he

has now been introduced to a part of the model railroading hobby that he may not have even known existed before he and his wife Dolores showed up at the Garden Railway Convention in Orlando this past April.

Bernard and Dolores, you are in for some wonderful experiences as you involve yourselves more in the live steam side of our hobby. You'll meet some of the finest people (men, women and youngsters) you've ever had the pleasure of knowing. I'll go further and say that you'll form friendships that will last a lifetime.

Come to Diamondhead, Mississippi next January and find out what I mean!

Who Are Those Guys?

It's always nice to connect a name to a face, so while we're showing some faces we thought it might be nice to show you a couple of our kindred spirits in the U.K. Their names will be familiar to you, but probably not their faces. That's **Tag Gorton** on the left, of Longlands and Western fame. Tag, also known as the "**Merlin Wizard**" has done a fine job of filling the pages of SitG with his excellent photos and articles on various steam locos.

On the right is **David Pinniger**, who has also had his share of articles in print in SitG and elsewhere. Currently David is writing a regular steam column for GardenRail magazine in the U.K., and his roots in small-scale steam go way back to the days of Jack Wheldon and Stuart Browne and Archangel Locomotives.

Seasoned veterans, and a couple of very fine fellows.



And that's about all the space we have for this issue. See you again in a couple of months, and until then.....

Happy Steaming!

Ben



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SWAP SHOP

IF YOU ARE BROWSING YOUR SITG BACK ISSUES FOR INFORMATION ON A SPECIFIC SUBJECT, YOU NEED THIS INDEX! Index to first 5 volumes of SitG, indexed by author, subject & contents. Send \$5 (cash, check or money order) to Ricky Morningstar, 11 Kimberly St., Riverview NB, CANADA E1B-3P8.

Wanted: Aster Pennsy caboose; J&M Pennsy automobile car; LGB 1200, 1205, 1210 and 1215 switches, old style with short moving points. Allen 1-1/2" scale 10-wheeler, running or not. Fine Art Models Pennsy flat car (less load) Jerry Hyde (614)946-6611. (34)

For Sale: (#1) Roundhouse Sandy River 2-6-2. R/C, excellent condition, runs great! \$2800 includes shipping in the USA. **(#2)** Roundhouse Pooter 0-4-0. Burgundy, R/C, excellent condition, good starter loco. \$800 includes shipping in the USA. Jim Overland, Seattle WA, 206-524-5875. (33)

For Sale: New in the box, old style Maxwell Hemmens Porter with wood cab, tender & fuel tank. \$1450.00 includes shipping. Call Bob at 941-495-0491. (33)

For Sale: Live Steam Baldwin-style 0-6-0, gauge 1. Miniature Steam Railways chassis, spoked drivers, cylinders Chaney throttle and alcohol burner. Removable wood cab. Trackside Details domes & bell. Precision Scale working knuckle couplers. Photo available. \$400. Alan Olson (303) 733-0472. (33)

For Sale: Large Scale Steam Era Vehicle Kits; Die Cast Metal 1/20 Ford, 29 Pickup, 30 Victoria Sedan (Taxi), 30 Phaeton \$20.85 each; and 29 Station Wagon, 31 Town Sedan, 31 Coupe (rumble seat) \$19.95 each; and 09 Sport Runabout, 12 Depot Hack, 12 Delivery (Pie Wagon) \$27.98 each; 1/18 Dusenber, 30 Dual Cowl Phaeton \$29.98. Plastic 1/24 Mack 26 Bulldog Log Truck \$26.25, 32 Cadillac V-16 Dual Cowl Phaeton \$24.50, 30 Packard Boat-tailed Speedster \$20.00. Plastic 1/25 Ford 34 Pickup \$12.50. J. Mitchell, 27 Farm Hill Rd., Cape Elizabeth, ME. 04107 - (207) 799-0570. (34)

Wanted: Aster SP Daylight GS-4 live steam, kit or factory built. Also looking for Precision Scale Co. boxcars, painted or unpainted. Please state condition and price. Joseph Hultay, PO Box 618, Fort Montgomery NY 10922 phone 914-446-5626. (34)

Wanted: LGB Straight Track. Either their longest straight sections or their rail and tie strip. Condition not important, as long as it is servicable. Rich Chiodo, 603 -926-4858 - 7pm-9pm EDT. (34)

For Sale: Hyde Out Mountain Live Steam Shay with side oiler and HiTec R/C. This is one of 100 made and is the only one produced with an extra tender to make it a 3-truck Shay. Runs great and is in Excellent Condition. \$900.00 obo, and will ship for free. Keith W. Jones, 724 Copp Road, Strasburg VA 22657. Phone (540) 465-8397, evenings. (34)

For Exchange: Two 7-1/4" gauge locos - a coal fired 2-truck, 2-cylinder SHAY based on Molino Timber Co's 30" gauge No. 1 (Const. No. 2590) of Loma Prieta, California.....and a 50cc petrol driven HUNSLET Industrial 0-6-0. Can't lift them anymore so will trade the pair for

about the price of an Aster Big Boy (preferably a kit if one still exists), or will consider possible sale or trade for other U.S. outline locos. No freelance or European. Write Mel Ridley, High Noon Loco Works, Teignmouth, Devon, UK, or phone/fax 01626 779908. (34)

For Sale: SitG back issues, #10 thru #33, good condition, sell all as one lot only. Price negotiable. David Fron, 847-647-1140 ext. 254 (7:00 a.m. - 3:30 p.m. Central Time Zone). (34)

Announcement: If you would like to receive the new Gauge Three Newsletter, send three Large Self-Addressed Envelopes to J. C. Newton, Box 434, Williams, OR 97544. Send no money. You will get one or two pages that will tell you of other people working in Gauge 3, who is producing Gauge 3 products, and what they are doing and building. Gauge 3 is a designation for a track width of 2-1/2 inches. We would appreciate any letters, comments, articles, new ideas, photos and information of what you are doing in Gauge 3. Let us know if we may publish your address and phone number. Do send those LSASE's and your input! Thanks. J. Newton, 541-846-6647 (address above). (34)

For Sale: Mamod 1360 Maroon Passenger Railway System RS3. Complete boxed set with oval of track, only run 3 times. Current NEW price \$696, will ship US via UPS for \$400. With Mamod TE1A Tractor, \$500. Blake Armson 608-635-2178 days or evenings (Wisconsin). (34)

Swap: Highly detailed 6' x 10' Lionel O-gauge layout on wheels with scale style scenery -- swap for gauge 1 live steam engine and/or all American made rolling stock kits. David Cummings, 5448 Poinsettia Drive, New Port Richey FL 34652. Phone 813-842-5231 (34)

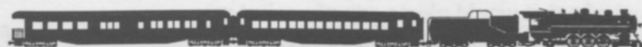
For Sale: Wileco D-22 2-cylinder stationary engine. Nearly new. Cost \$449.95 new - price negotiable. Sid Neal, 2239 Black Canyon Rd. #12, Ramona CA 92065 - phone 619-789-2829. (34)

Wanted: Stationary steam engines - Bing, Marklin, etc. Also steam locos, clockwork locos/automobiles from same era. Mamod Double-Decker bus, delivery van. Also loco test/display stand. Ashok Rajan, 201-379-7109. (34)

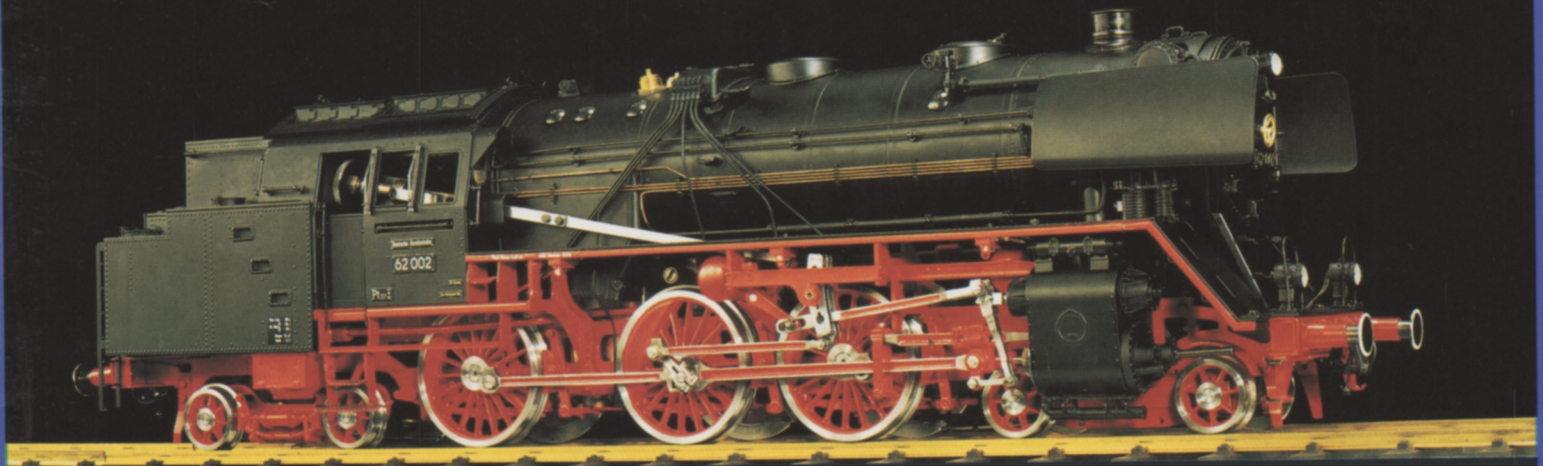
Wanted: Aster OUEST 0-6-0T, Climax and 2-cylinder Americanized Mogul. Reply to: Kevin O'Connor, PO Box 161631, Sacramento CA 95816-1631 - (916) 447-5433. (34)

For Sale: J&M lined Pennsy cars, set of 5 including rare diner. New in boxes, never run. Selling for exactly what I paid - \$4500.00. Contact J. Hyde, (614) 946-6611. (34)

Swap Shop listings are offered at no charge as space permits. No phone-in ads, please! Send your listings to SitG, PO Box 335, Newark Valley NY 13811, or fax to 607-642-8978(24 hours), or e-mail to <docsteam@servtech.com>. Ads must contain sellers name, plus address and/or phone number.



THE BR-62 "MAMMOTH"



Like the Prussian T-18 (later known as the BR78), the Reichsbahn BR62 "Mammoth" was conceived and built with a 4-6-4T wheel arrangement and an emphasis on economics and simplicity. Many years before any European 4-6-4's existed, the American locomotive builder Norris had demonstrated the feasibility of high speed locomotives by utilizing a four wheel leading truck configuration, which provided a safe and stable ride, even on rough tracks. Although Norris' configuration was popular in North America, it was not used in Europe during the early days, owing to the relatively short runs and smooth tracks which existed there. For distances of 160 km, tank locomotives were commonly used in both Europe and Japan since they eliminated the weight of the tender and allowed the locomotive to be operated at approximately the same speed in both forward and reverse directions, thus eliminating the need to turn the locomotive for its return journey. As speeds reached 90 km/hr., European designers turned to the four wheel truck for both leading and trailing wheels as being the solution to stability problems as well as keeping wheel loading within existing track limits. Starting in 1912 in Prussia, more than 500 T-18/BR 78 "Baltic" 4-6-4T's were constructed, and because of their phenomenal success, the Reichsbahn railway unification office in Berlin selected another 4-6-4T configuration, known as the BR 62, to be designed during the 1920's. The design of the BR 62 was based on that of the BR 78. However, many clever improvements were made. Unfortunately, a serious economic crisis was beginning in Germany during the late 1920's and only 15 examples of the BR 62 were built by Henschel at their Kassel works despite the locomotive's excellent performance. BR 62's operated during WWII; many survived those terrible days and continued to operate until 1956 in West Germany and possibly as late as 1976 in East Germany. Technically, the locomotive was a complete success and had "...the most beautiful architecture of all the unified locomotives".

SPECIFICATIONS OF BR 62

SCALE/GAUGE 1:32, GAUGE ONE
TOTAL WEIGHT 5.5 KG

DIMENSIONS:

LENGTH 535 MM
WIDTH 97 MM
HEIGHT 143 MM

WHEEL ARRANGEMENT 4-6-4, LEAF SPRING ACTION
DRIVING WHEELS DIA. 55 MM, STAINLESS STEEL
PILOT TRUCK WHEELS DIA. 24.5 MM, STAINLESS STEEL
TRAILING TRUCK WHEELS DIA. 24.5 MM, STAINLESS STEEL

ENGINE:

CYLINDERS 2 X CYLINDERS WITH CROSSPORT,
BORE 12 MM X STROKE 20 MM
VALVE GEAR HEUSINGER VALVE GEAR
STEAM PORT 1.5 MM, CUT OFF 84%
LAP 1.0 MM, TRAVEL 5.0 MM

BOILER TYPE "C" TYPE FOR ALCOHOL BURNING
WATER CAP. 280 CC AT 80% FULL
PRESURE 3 KG/CM2 AT NORMAL WORKING
FITTINGS 2 X SAFETY VALVES, 2 X SUPERHEATER TUBES, PRESSURE GAUGE, WATER GAUGE, BLOWDOWN VALVE, THROTTLE VALVE, BLOWER VALVE, BYPASS VALVE

AXLE DRIVEN PUMP

LUBRICATOR
BURNER

WATER TANK CAPACITY 300 CC, HAND OPERATED PUMP MOUNTED
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MINIMUM RADIUS 2 METER
WORKING LAMPS 2 X HEADLIGHT
(BATTERY 2 X TAIL LIGHT
OPERATION) 6 X VALVE GEAR CHECKING LAMPS

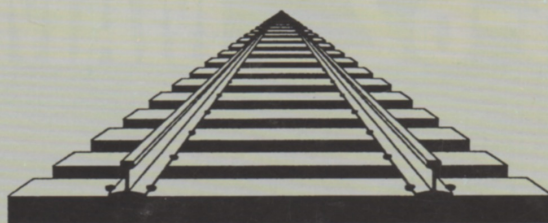
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