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STEAM IN THE GARDEN

with Steam on the Pond

Vol. 10, Nº 5

Issue Nº 53

November/December 1999

Articles

Departments

FRONT COVER: The Mighty Mallet awaits a spin of the table so it can go to work on the Rivendell & Midland. Read all about it in this issue! ***photo by Les Knoll***

OUTSIDE REAR COVER: Clockwise from upper left: A 32mm Cricket hauls a rake of tiny passenger coaches on Jim Slater's Rwy. in England. ***(photo by James Slater)*** - Keith Manison's pristine Merlin negotiates the curves on one of Chip Rosenblum's many lines in Ohio. **(this photo next & photo by Dlanor Nworb)** - Jerry Reshew's beautiful Pushme-Pullyou (Double Fairlie) takes a rake of coaches around Masada in Chip's back garden. - Bill Chamberlain risks a gator attack to rescue his Linda Marie steamboat from a swamp in Florida ***(photo by Rob Osterhoudt)*** - Steve Siegel points out an interesting feature on the steam plant in his gorgeous plank-on-frame boat **(this and next photo by Dlanor Nworb)** - Would you buy a used steam loco from these guys? Keith Manison, Joel Neshkin, Harry Wade and Chip Rosenblum take a moment out from the festivities at Chip's steamup.

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Ron Brown

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Questions or comments? Call us Mon. - Thurs. at 607-642-8119 - before 9:00 p.m. Eastern time, please - or FAX us any time at 303-975-6211. e-mail address: rbrown5@stny.rr.com

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

1999 - 2000 CALENDAR OF EVENTS

December 31, 1999 - January 2, 2000 – New Year's Steamup and Open House on Walt Swartz's Swamp RR in Naples, Florida. Double-track mainline on Walt's large, beautiful elevated track with covered steaming area makes for great steaming in any weather. For more information or directions, contact Walt by phone at 941-455-6952 (evenings) or via e-mail at NaplesDepo@aol.com or WaltSwartz@aol.com.

January 14-16, 2000 – National Small-Scale Steamup, Diamondhead, Mississippi, USA. Don't miss this one....it's the biggest miniature steam railroad convention in the world! Three elevated tracks to accomodate gauge 1, gauge 0 and HO steamers - Hornby Rocket Festival - Clinics - Round the clock steaming - Dealer room - Steamboats - Pop-Pop Boat Regatta - Attendees from around the globe! A new feature for this coming Steamup will be the Clack Valves and Cornets Steam Band concert, and we expect quite a few more foreign guests - more international flavor. Make your reservations now so you don't miss out. Contact Jerry Reshew, 5411 Diamondhead Drive East, Diamondhead MS 39525. Phone (228) 255-1747, e-mail: jreshew@mindspring.com.

February 13, 2000 - Cabin Fever Breakout V, Baird Community Center, 5 Mead St., South Orange NJ, 10 a.m. til 4 p.m. For Steamboat Captains, Crew, Builders, Friends and Wannabes. Swap & sell, socialize, plan local shows and meets, videos, photos and more. Free admission and parking, free coffee and donuts. For more info or to RSVP, contact Charles Roth, 212 Route 513, Glen Gardner, NJ 08826 - (908) 638-8341. Sponsored by the South Orange Dept. of Recreation & Cultural Affairs.

February 19-21, 2000 - First Big East Coast Train Meet in 2000, to be held at Steamtown, Scranton, Pennsylvania. This is the 3rd Annual Steamtown meet by the Pennsylvania Garden Railway Society. Live steam and electric running on gauge 1 track, plus other assorted large gauges. Several tracks in operation. For more info (including a list of hotels in the area) contact Clem O'Jevich Jr., 32 S. Market Street, Nanticoke, PA 18634. Phone 570-735-5570.

May 7, 2000 - 4th Annual Large-Scale & Garden Railway Show & Sale, Liverpool Elks Club, Syracuse NY, 9 a.m. to 4 p.m. Operating live steam demonstration, operating layout.For more info and/or table reservation, contact Gordon Davis, 315 Viking Pl., Liverpool NY 13008 - (315) 451-3199. Presented by the Central NY Large-Scale Railway Society.

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

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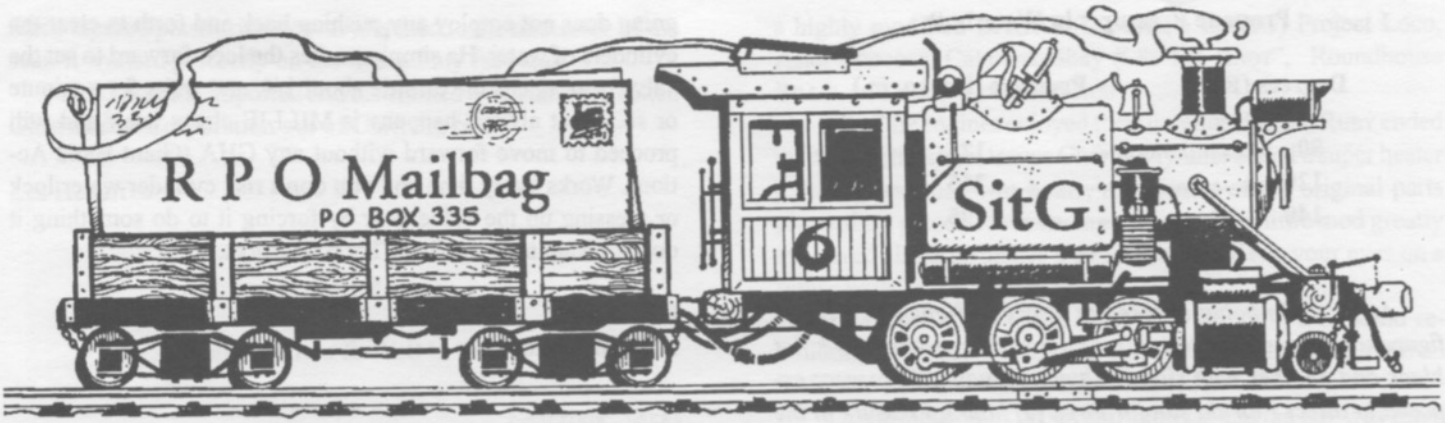


Letters from readers are welcomed and encouraged. Offer advice, encouragement, suggestions or constructive criticism. Tell us about your current project (and don't forget the photos!) or just share live steam experiences. But please keep your letters to a reasonable length so everyone has a chance to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

* * * * * *

W. Australia
via e-mail

Dear Ron,

Congratulations on the continuing excellence of the magazine. I am rather concerned that the article on constructing the Propane gas tanks *(Propane 4 Butane, SitG #51)* poses considerable danger. At normal ambient temperature - about 50 - 100 degrees Fahrenheit, - the tank will be marginally safe, but at any higher temperature it becomes very dangerous indeed. The soft solder will always fail well below the parent metal's failure pressure, even with annealed copper tube.

In a loco standing in the sun, or inside a car, the tank temperature may rise to 200+ degrees Fahrenheit. At these temperatures soft solders lose a lot of strength, so the permitted pressure drops to 90 psi at 200 degrees F. or 75 psi for 250 degrees F. for 50/50 solder and 200psi for 95/5 solder. *(Source "Copper Tube Handbook")* Note these assume a very good well made solder joint - a not so good joint will fail at far lower pressures.

Clearly the author is a very good craftsman and has taken steps to ensure a good joint, but not all amateur builders are that good.

At these temperatures Propane has a pressure of 850 psi, well over the recommended working pressure for the joints, (4.5 times in fact), and the force tending to push the end out of a 2 inch tank is 2671 pounds. The chances of it letting go are excellent. This is also double the recommended maximum WORKING pressure for the copper tube.

Very much higher tank temperatures, (and pressures) are possible when something goes wrong. There are at least three cases of gas tank failure in model locos in England, due to a seal or flexible connection leaking, or failing, or a pipe cracking, and in these cases the leaking gas has ignited and flames played on the tank. Lord knows what the temperature and pressure in the tanks reached under these conditions!

The ensuing explosion and/or conflagration from a failure will almost certainly destroy or badly damage the loco, and could cause injury to people nearby. And it will be followed by the immediate descent of both the vultures (lawyers), and the regulatory bodies - (the Nannies).

The other potential hazard is the securing of vent and filler fittings to the shell by threading them directly into the shell and end cap walls rather than into inserted threaded bushes. This method will not allow many threads in the thickness of the plate (0.070") and caps, and as copper is notoriously difficult to get a good thread into, so there is a real possibility of these being shot out by overpressure, causing a vertical jet of gas/liquid/or flame straight into anyone leaning over the loco.

If you are going to use propane, then a welded steel tank is preferred, or failing that, a silver brazed copper or brass tank, hydraulic tested to 450 psi or higher. Mine is made of 3/16" thick brass tube and ends with stays to the flat ends - tested to 600 psi.

Jim Gregg

Ken Parkinson, author of the subject article, responds:

Mr. Gregg has called attention to a subject which I should have covered in greater detail. It is important that safety always be considered when working with pressure vessels.

Mr. Gregg made several assumptions that I must clear up. I do not use 50/50 lead/tin solder for these vessels. The Copper Tube Handbook states that at 250 degrees using 50/50 solder the maximum pressure is 75lb/sq.in. This is the figure he used. However, I use 95/5 tin/antimony or 96/4 tin/silver for this work. The safe working pressure then rises to 175lb/sq.in. for 1.1/2 to 2 inch tubing. However, I was unable to register a pressure of more than 220 lb./sq.in. in the Florida summer sun for three hours, indicating a temperature of less than 120 degrees.

Another error he made was stating that the thickness of the vessel with end caps to be .070 inches, forgetting that it is double thickness at this point. That makes .140 inches of material to tap into. Copper will thread very well with the proper lubricant and fine threads. I use 7/32 x 40 threads for installed the valve assemblies. They are also soldered in place.

For testing, several setups are used. I use a waterbath, immersing the tanks filled with propane at several temperatures for 30 minutes at a time..

Propane Pressures in Waterbath

Degrees (F.)	Pressure (lbs./sq. in.)
80	125
120	255
140	295

As for tanks being exposed to direct sunlight, Mr. Gregg's figures are way off. To test this, I painted one propane tank flat black and another with silvery aluminum paint. They were exposed to direct Florida sun for three (3) hours. Pressure in the black tank topped out at 220 lb./sq.in. The silver tank showed a pressure of 210 lb./sq.in. Therefore it appears there is no great advantage in using a lighter color. It seems wise, though, to accept this small benefit.

Pressures in Florida Sun

Black Tank	Silver Tank
220 lb./sq.in.	210 lb/sq.in.

In an attempt to test to destruction, I dropped a tank filled with propane gas into a pot of boiling water...thoughtfully protecting myself behind a concrete wall. There was no change to the tank after 30 minutes.

Fire is always a serious threat. I contend that the flat sided, unstayed tanks of butane, as used on most models, are subject to rupture under fire conditions

Ken Parkinson

* * * * * *

Hi Ron,

Thanks for the latest issue of SitG. I really don't care what month you put on the cover as long as the content is like #52. Lots of great reading.

Peter Jones' notes on MILLIE got me thinking about a couple of tricks I've learned/picked up while working with three MILLIES. I've seen two MILLIES come from the factory with both the valve and cylinder gland nuts really 'nipped up'. They were so tight that the loco was binding. These should be checked that they are just finger tight so that steam is not leaking. No need to use giant wrenches here!

The next trick concerns the amount of water in the boiler. Roundhouse says draw off 30 ML from the boiler to provide steam space. I've found that I get almost no priming if I draw off a full 50 ML. The gas will run out before the boiler goes dry. I've verified this on a sight glass equipped MILLIE. It's important to remember as water gets hot it expands in volume, so give it room.

The last trick was shown to me by my good friend Jim Crabb of Houston Live Steamers. His method of getting the MILLIE going does not employ any pushing back and forth to clear the cylinders of water. He simply pushes the loco forward to set the valve gear, opens the throttle about 1/4, and waits for a minute or so. What always happens is MILLIE clears itself and will proceed to move forward without any GHA (Giant Hand Action). Works every time and you don't risk cylinder water lock or messing up the valve gear by forcing it to do something it doesn't want to at the time. Try it. It works.

Best regards,
Mike McCormack

* * * * * *

via e-mail

Hi Ron and Marie,

Just now flying back home from speaking in Cincinnati at the Fire Museum, corner Court and Plum Streets. Fantastic live-steam powered fire pumpers and working scale models! Would suggest to any SitG reader a visit to this neat place. Keep the fire up under your boilers!

Best regards,
Kraig Kramers

* * * * * *

via e-mail

Dear Ron,

Jerry Reshew in his review of the Aster Jumbo kit wrote of getting an air tank filled at a filling station to provide a source of compressed air for testing the engine. A perhaps more convenient source is a compressor of the type intended to plug into the cigarette lighter socket of a car. It can be run from an HO power pack and its speed then varied to give whatever pressure is required. An alternative is a compressor salvaged from a refrigerator or airconditioner, it has the advantage of being a lot quieter.

Murray Wilson

* * * * * *

Sun City, AZ
via e-mail

Dear Ron,

I thought I might add some input to the continuing search for low priced butane. In a store called "Popular Outdoor", in Peoria, AZ, I found 8oz cans of straight butane for $1.99. I bought several cans not knowing if I would need to make up some sort of adapter to fill my Aster Mogul. When I returned home, I found

that a tapered plastic nozzle was attached to the underside of the seal. It worked perfectly on the inlet of my fuel tank.

This butane is imported and distributed by a company called Glowmaster Corporation out of Garfield, NJ.

Les Hebert

* * * * * *

Steam is Alive & Well in Texas

Seabrook, Texas
via e-mail

IF YOU WEREN'T AT THE HOME OF JOHN & CAROLYN THOMPSON TODAY (Nov. 6) YOU MISSED A GREAT TREAT. I told you before that John had constructed a first class, elevated (double loop) Gauge 1 track using new materials and innovative techniques. This was enjoyed by about a dozen folks; 5 from the Houston area, 1 from San Marcos and the rest from the Dallas area. Dave Young drove the longest -- coming from Santa Fe (Texas). Carolyn provided a great lunch (she said John helped!), including some famous BBQ brisket.

Lots of engines were running, including a couple of MILLIES, two SR24s (one coal fired), a GUNGA DIN, OLD COLONIAL (an early Roundhouse Americanized LADY ANNE), Pearse COLORADO, a highly modified BAGRS (see article in *SitG*) Project Loco, Aster SCHOOLS, Catatonk Shay # 8 "FIR KNOT", Roundhouse BILLIE, and a new Accucraft RUBY.

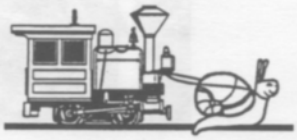
All of the engines enjoyed their limelight but the RUBY ended up stealing the show 'cause Charlie Mynhier added a super heater to her in less than two hours, using most of the original parts plus a short piece of tube and a coupling. This little mod greatly improved all performance characteristics. (Keep your eyes on a future write up in *SitG*!)

This wasn't like Clark Lord field stripping a K-4 and rebuilding the boiler -- it fact, IT WAS DESCRIBED AS BEING PRETTY EASY! -- using only hand tools.

Charlie held court on several subjects and the day was filled with fun, fellowship and learning. The weather and food were wonderful and the creative juices were really flowing.

Everybody is looking forward to Diamondhead 2000 but several local steamups will be held before then. Next will be November 28 (Sunday after Thanksgiving) at Jim Crabb's in Seabrook.

-- submitted by your faithful scribe
Jim Crabb



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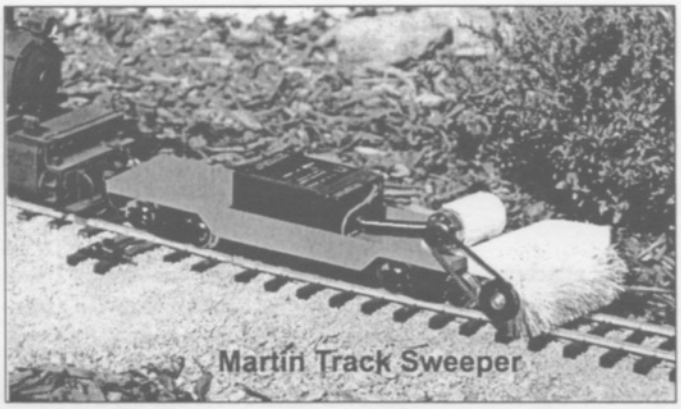

The Martin Track Sweeper (MTS) car is designed to sweep Gauge One track of dirt, leaves, bark, small rocks, twigs, and other debris. The MTS car is motor driven with an onboard battery and is designed to be pushed by a locomotive during track cleaning. Use is simple; just place on the track, turn-on the toggle switch to start the motor and brush, and begin moving forward. The onboard battery is a 6 Volt DC, 4 Amp-Hr Sealed Lead Acid battery for long running time, and the car comes with a battery charger.. The MTS car is delivered either with a replaceable, nonabrasive rail cleaner to aid in maintaining electrical continuity for track powered railways, or without the rail cleaner for use on railways not using track power. The drop-center car is delivered with a rear coupler, selectable by the buyer from those typically used in the hobby. Cost of the Martin Track Sweeper Car is $349.00 plus S & H for the version equipped with the replaceable abrasive rail cleaner, and $334.00 plus S & H for the version without the rail cleaner. Please specify rail code 332, 250, or 215. Both versions are available from California & Oregon Coast Railway, 1-800-866-8635. Please tell them that you saw it in SitG.

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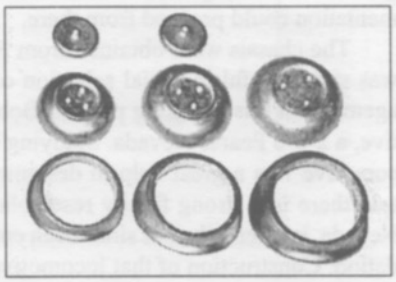
Trackside Details, 1331 Avalon St., San Luis Obispo, CA 93405 has added even more excellent lost wax brass detail castings to their line...new dome sets in 3 sizes, which when combined with existing dome sets (TD-16, TD-17) brings the total to 4 sizes. Now you modelers, kitbashers, etc. have no excuse to avoid crosskitting and scratchbuilding, at least as it pertains to proper domes! Part numbers for the dome set parts shown in the photo at left are, left to right, starting on the bottom row: TD-163, TD-174, TD-175 (middle row) TD-186, TD-183, TD-187 (top row) TD-188, TD-188. Not shown, but definitely worth mentioning, is TD-185, a new, smaller, nicely detailed smokebox front. If you haven't used Trackside Details castings to dress up your locos and rolling stock, you're in for a very pleasant surprise. All castings are clean, crisp and BRASS! Pete Thorp, Trackside Details' Brassmaster, will be at DH 2000. Look for him and tell him how much you like his parts. If you send Pete $3.00, he'll send you a great illustrated catalog worth its weight in ~~gold~~ brass because it shows proper placement of all the nifty details.



Narrow Gauge 2-4-4-2 Mallet

text and photos by Les Knoll

Need more pulling power?

My attachment to 2-4-4-2 Mallets began way before I was bitten by the live steam bug. The original concept of my HO standard gauge 'Rivendell & Midland' called for a roster of a small Consolidation, a two truck Shay, and a Mallet similar to the Little River 2-4-4-2. That exact roster has carried over into my live steam garden railroad of the same name. My HO Little River 2-4-4-2 was kit bashed from two Roundhouse (Model Die Casting™, that is) 0-6-0 switchers. Little did I know that decades later I would do the same thing with kits of the same name in live steam. It was my desire to duplicate my original HO roster in 1:20.3 live steam. The toughest item on that roster was, of course, the 2-4-4-2.

I considered having the locomotive custom built by others, but after finding out the long lead times for such things, and learning of the excellent kits and ready to run components available from Roundhouse Engineering, I decided to give scratch building in live steam a try.

The plan was to obtain two Roundhouse 0-4-0 chassis, one complete with boiler and the other a bare chassis, and work on converting them to a single locomotive. There were many technical questions to be answered in building a Mallet. First and foremost was whether to run the locomotive simple or compound. Following that was the method of pivoting the front engine, what to use for flexible steam lines, and how to synchronize the reversing of two sets of Walchaerts valve gear. Weight distribution over the two engines was also a consideration. I had experience in that area from building the HO version of the 2-4-4-2. The Roundhouse chassis come as outside frame units. Initially I did not know whether the locomotive would be inside or outside frame. I preferred inside frame, and initial CAD drawings showed that an inside frame locomotive, similar to the Little River, would be my ideal. Starting with two fully functional Roundhouse chassis would give me something that I at least knew worked, and other experimentation could proceed from there.

The chassis were obtained from Rio Pecos. Bob Osterhoudt was very helpful in initial selection of components and encouragement on this fledgling project. Bob sold me my first locomotive, a 2-6-0 Pearse Nevada. Studying the construction of that locomotive was a great help in designing the Mallet. I have been told there is a strong family resemblance between the two. The Nevada, incidentally, has since been converted to a 2-8-0 Consolidation. Construction of that locomotive was covered in the May/June 1999 issue of *Steam in the Garden.*

The first step was simply to run the 0-4-0 chassis to get a feel for how Roundhouse products are fired and how they run. The full chassis ran superbly right out of the box. The second chassis was placed in front of it with a makeshift coupling. The exhaust lines from the rear cylinders were fed into inlet lines of the front cylinders. Bob Paule of Sulphur Springs supplied silicon tubing for the flexible steam connection, and an attempt was made to run the two chassis compound.

I did not think compounding would scale down particularly well to 1:20.3. I know that at least one Aster locomotive is a true compound, but there is quite a difference in cylinder bores between high pressure and low pressure cylinders. My cylinders are all the same size. My experiment with compound running did not turn out very well. The front or *low pressure* cylinders merely provided back pressure for the exhaust of the high pressure cylinders, dramatically decreasing their efficiency and contributing no pulling power whatsoever. It was then decided the locomotive would have to be run simple.

Some prototype articulated locomotives also ran simple. Some were converted from compound to simple. Purists may say that this locomotive cannot correctly be called a Mallet. Some literature is in question as to whether the patents by Anatole Mallet defined only locomotives with both a swiveling front engine and compound operation, or if these features were treated individually in the Mallet patents. I am not a patent attorney, I don't know if this locomotive can truly be called a Mallet since it does not run compound, but enough other people call it a Mallet, so let 'em.

Another issue that had to be addressed at this time of experimentation was whether or not the steam for the four cylinders had to be superheated or not. By this time I already owned two locomotives, a Pearse Nevada with superheating, and a custom built Geoffbilt T-boiler Shay without it. If I did not superheat, the piping for the steam lines would be much simpler. The lines were long, and it was assumed that the effect of superheating would be lost anyway. Again, thankfully I had these two fully working chassis to experiment with. Following the advice of Geoff Coldrick, I ran two separate steam lines teed off less than 2" from the boiler mounted throttle at the rear of the locomotive. One line ran directly to the rear engine as on a two cylinder locomotive. The other ran parallel to this first line, crossing the chassis swivel point with silicon tubing, and continued to the front engine.

Synchronizing the reversing gear was far easier than expected. The rear engine's weight shaft is operated by a reversing lever in the normal fashion. There is a small crank on the rear weight shaft directly in the center of the chassis. A 1/16" brass rod mounts to this crank with the same hardware as is used on R/C servo arms. This connects to a similar lever on the front engine. The effect of the front engine pivoting through a small angle and on a compara-

The Mighty Mallet crosses a trestle on the way to Moria, on the Author's Rivendell & Midland railroad in Illinois.

tively large radius arc seems to have little effect on valve gear staying in sync. I have even run this locomotive on constant throttle, varying the cutoff for speed and power with successful results.

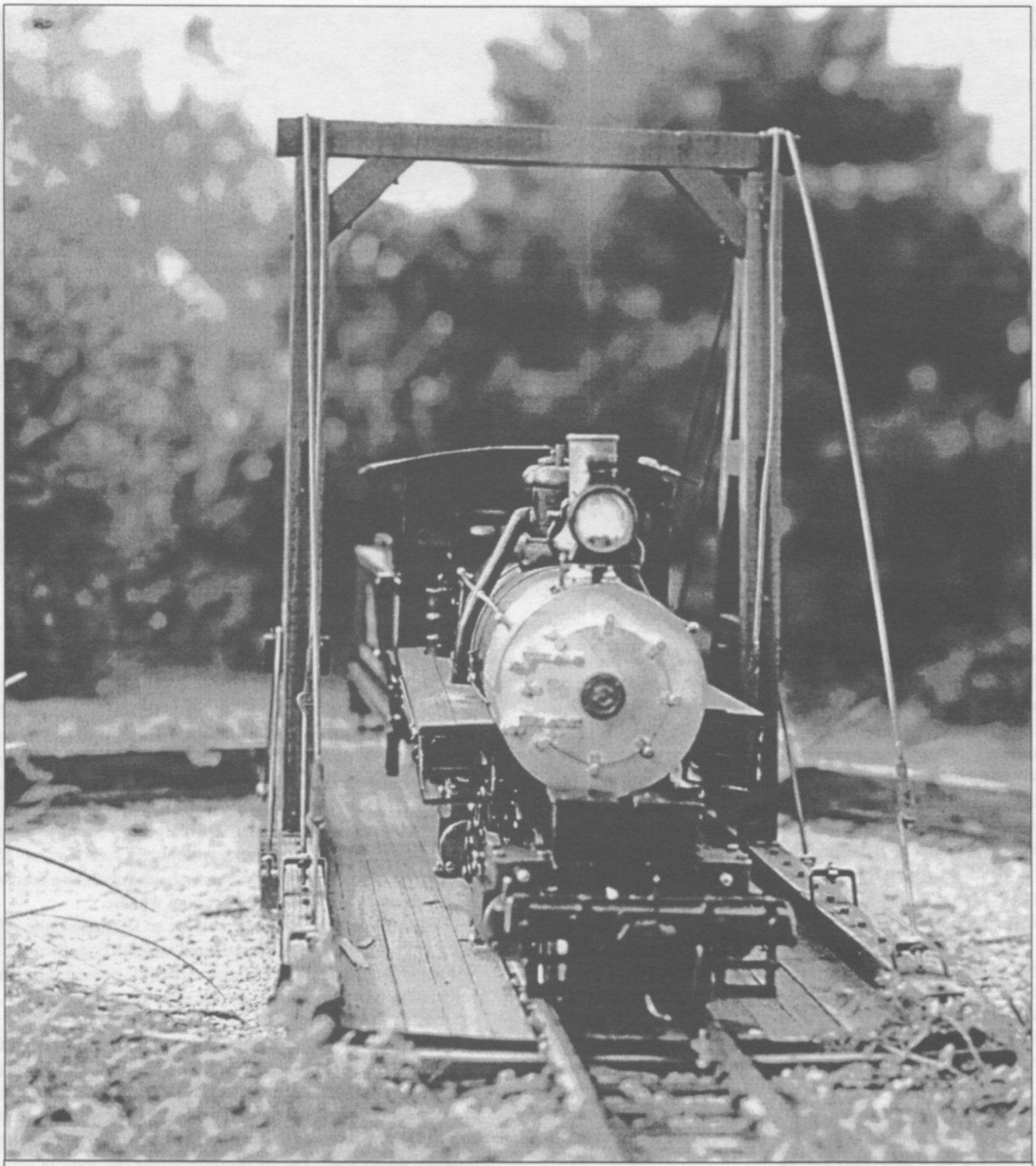
A plastic tender was added to experiment with tender mounted fuel supplies. Conventional neoprene rubber tubing was found to work well to handle the required flexible connection. The value of a water bath for heating was also realized. As will be seen later, much alteration of the original firing system was needed to keep up with the appetite of four hungry Roundhouse cylinders. The water bath is not just used to keep the gas at the temperature of its surroundings. Using hot water in the bath raises gas temperature to boost gas pressure, increasing firing capacity. This increases boiler steam output.

Most of the basic operating specifications were now established. The locomotive was to be run simple, with no super heater, individual steam lines to each cylinder pair, and have a tender mounted fuel supply with a bath for heating the gas. If possible, the chassis would be inside frame.

I started to work out proportions of the design using drawings from *Model Railroader* on the Little River 2-4-4-2. I soon realized that with the parts available I could not build a true scale model of this locomotive. Driver and cylinder size did not match up, and other key dimensions could not be maintained. After some time the reason for this suddenly became obvious: Little River was a standard gauge locomotive....I am modeling in narrow gauge!

Twilight is fast approaching as the Mallet brings the inspection train (filled with stuffy railroad brass hats) to an unannounced stop at Rivendell Station.

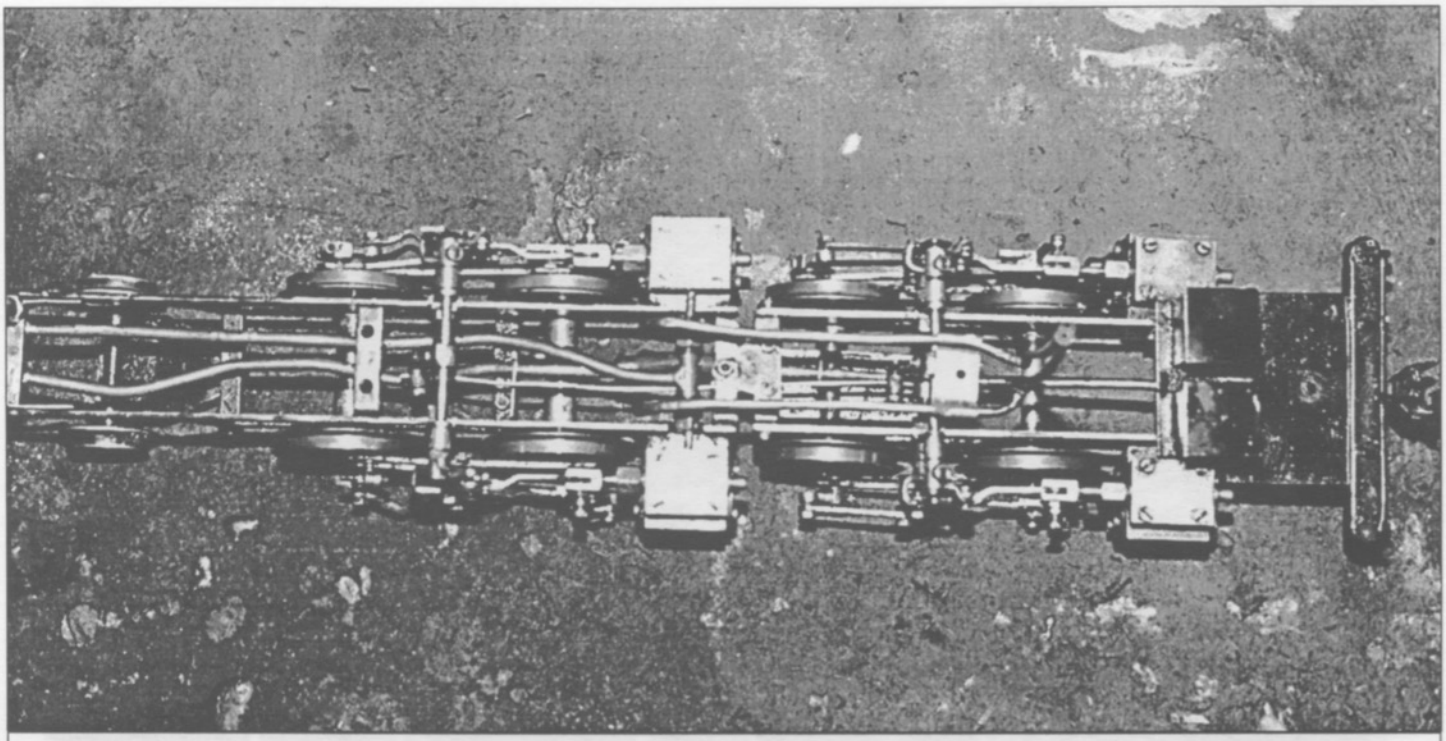
This was actually a break for me because even though the Little River prototype was for me the definitive 2-4-4-2, I always wanted a more 'old time' Mallet. I remembered an article in Narrow Gauge Gazette in 1978 or 1979 about a free-lanced 2-4-4-2 done in HOn3 and built from commercial and scratch built parts. It represented a fictitious Baldwin of about 1890 vintage, 20 years before the Little River. I started building such a locomotive to complement my existing HO standard gauge Mallet using HOn3 kits from Model Die Casting™. The HOn3 locomotive was never completed. This time I would have my old time Mallet, but in live steam.



Taking a spin on the turntable in Rivendell Yard

I decided to bite the bullet and develop the inside frame chassis. Two very important things had to change: the drivers would have to be new, since Roundhouse drivers are not spoked, and the wheelbase on each chassis would have to be shortened from 3.00" to about 2.50" to look right. The driver choice was very unusual but functional. I used Lionel drivers, and pressed them onto .250" axle material. The technique for building this type of inside frame chassis is described in my article in the March/April 1999 issue of *Steam in the Garden.* The front and rear wheelbases are shorter than the Roundhouse chassis. The main rods, side rods, and return rods all had to be made new. Fortunately the crank throw of the Lionel drivers is identical to the Roundhouse, so the rest of the Walschaerts valve gear can be utilized.

Much invaluable help was obtained from Roger Loxley at Roundhouse during this phase of the project. He provided me with frame drawings of the chassis to get the exact relationships of



The Author's Mallet, stripped bare for all to see. Lots of moving bits & pieces on this one!

mounting holes for axles and valve gear. He also gave me many insights in timing up the chassis. I thought that would never get done, and several times seriously considered giving the project up since I could not get the engines properly timed. I finally realized that the biggest problem was that I was 'eyeballing' the 90 degree relationship between the return crank and main crank. Since I had all these components laid out on a CAD system already, I set about the task of designing a simple fixture to accomplish this. A design similar in principle to a quartering fixture was devised. After using it the chassis literally sprang to life! Some fine tuning is always necessary, but I could now move forward knowing that my chassis would work.

I mounted the Roundhouse boiler over the rear engine, piped up the front and rear chassis, and after several weeks of refinement, had a working Mallet chassis running under steam. There was still one nagging problem: steam supply. I found that the small boiler could supply the four cylinders with a firing system using hot water in the gas bath, but after firing up, the locomotive would run for only 11 minutes before running out of water. The small Roundhouse boiler was used only for testing. The scale size boiler that would have to be built needed to be capable of a high volume steam supply for a far longer period.

I had always planned to have the boiler commercially built. I came up with an initial outline and design, then set out to have it built. The lead time for such a custom job was very long, so I decided to give boiler building a try. With good quality fittings and great advice from the boiler king, Harry Wade, I was able to start construction on the boiler. In the meantime, I obtained a new position with a consulting engineering firm that just happened to have a machine shop available for use after hours. The boiler was the only component of this locomotive that I built using machine tools. The chassis, tender, and all other parts were built using a drill press, rotary motor tool (always with safety glasses) and hand tools.

The first generation boiler was a single flue, 2.50" ID .060" wall copper boiler with an effective length of about 10". There was a .750" center flue with a slightly smaller wall. The smoke box was made removable by means of turned down flanges on boiler and smoke box. In the front end of the center flue there were six .250" cross tubes (or 'siphons') so water could flow around the exhaust gasses. Firing was by the burner supplied with the Roundhouse boiler. Accessories included safety valve which doubled as a water filler, sight glass, check valve for a feed water pump, pressure gauge, and a functional whistle.

I had never silver soldered a boiler, so I had this done. All the small siphon tubes were first soldered into the flue, then the ends were soldered to the boiler tube and the flue passed through and soldered in. Next the fittings for the sight glass, safety valve, and other bits were soldered in.

The boiler was hydrostatically tested to 100 PSI at my employer's lab. In static steam testing with the Roundhouse burner the boiler had no problem raising 50 PSI. It was then mounted onto the Mallet chassis for test of the entire locomotive. The boiler could raise the required steam pressure, but it could not maintain pressure under load. The locomotive could run light or pull one car, but would have to stop after about 50 feet to 'catch its breath'. Needless to say, I was heartbroken. I nonetheless took it to a friend's steamup where it was quite a hit since no one had seen a live steam articulated before. When I ran it, it could only pull one car. Still, everyone loved to see it run, troubles or not.

I found that the best place to take a locomotive with problems is a steamup. Don't be ashamed! It's like being sick and going to a doctor's convention. Someone is bound to be able to help you! Shortly after the steamup I got a call from my steamup host, John Tepley. Seems he had talked to Geoff Coldrick about my little Mallet and its aliments, and Geoff very wisely suggested that the

burner be made longer. I had been told some time earlier that this had little effect on boiler performance, but if Geoff had tried this, I would, too. Unfortunately, I was limited by the presence of those 6 cross tubes in the main flue, so I made the burner long enough to just touch the first cross tube.

To modify the burner, I cut off all but the first 1/2" of the Roundhouse burner and made a 3.5" long burner tube, about twice the length of the original. I used K & S brass tube that would just fit over the original burner tube. I capped the end with sheet brass silver soldered to the tube. Slotting the tube was done with a with a Ryobi motor tool (always use safety glasses - side shields are a good idea, too) to approximately half the depth of the tube. Slot spacing was 1/8" at the end closest to the jet, getting closer together as I reached the far end. Instead of cutting slots at right angles to the tube, I cut at 45 degrees. According to Geoff Coldrick, this reduces burner noise. This burner is quieter than my Pearse burner which has slots at right angles to the burner tube. I replaced the .006" orifice with a .007", and drilled two additional air holes in the gas jet area for the extra air this longer burner would require.

The effect of a longer burner on boiler performance was dramatic. Ten car trains were now no problem at all. The locomotive was literally able to pull every car I owned on dry, level track.

I ran the Mallet throughout most its first summer, sometimes steaming several times a day. Tragedy struck on August 7th that summer. The silver soldering of one of the boiler cross tubes gave way, and the boiler failed. Water poured out of the main flue from the area where the burner was mounted. It was coming from one of the cross tube joints that had given way. The soldering on these little tubes was just too fine to withstand the rigors of an overactive gas burner. I had wanted to evaluate the effect on boiler performance of cross tubes versus elongated burners. This was not a tragedy, it was a research opportunity!

Through my employer I now had access to good sized brazing torches. I decided to rebuild the boiler myself with a simple center flue, eliminating the cross tubes. I also added a filler with a Goodall valve in the sand dome. I originally filled the boiler through the safety valve opening in the steam dome. Using that method there were a lot of fragile parts to remove just to fill the boiler. I also took the time to redo other things I felt I could now build better, like the front pilot and smoke box front. I also routed the exhaust of the rear engines to the stack. The front engines simply exhaust out their ports. From a distance, it looks like the drain cocks are open. Don't ever be afraid to do anything over again if you think you can do it better a second time. I constantly rework my existing models as knowledge and skills increase.

The boiler research paid off. There is a far greater increase in boiler steam capacity and recovery with elongated burners than with cross tubes, at least in the size boilers I am building. This is because the firing area, and more importantly the firing length is increased. I believe this will be very important information to those building in 7/8" scale, where larger boilers are required. Running duration without refilling is 30 minutes, less time if the locomotive is really working. I usually make it earn its keep. 10+ car trains are far from the exception, and switching chores are frequent. It has successfully operated in the dead of winter with near zero temperatures.

That makeshift plastic tender was replaced by one scratch built in brass. It follows Pearse construction closely, and is 1.5" longer and about 3/4" taller than the one supplied with their Nevada. It holds the R/C equipment, a fuel tank which is filled through the water hatch, and the water bath. It has working marker lights and a reversing light that comes on when the valve gear is put in reverse. It is detailed using parts from Trackside Details and Ozark Miniatures, as well as many fabricated scratch built details.

Weight distribution is a major consideration on a Mallet locomotive. As with the HO scale 2-4-4-2 I built, the locomotive is balanced so that the entire weight of the boiler is on the rear engine. The front engine is attached with a simple pivot top and bottom. There is enough play in this pivot so that the front engine can negotiate an incline when it encounters one without binding. There is enough weight in the front chassis to provide good traction. The boiler may bob up and down on very rigid track that has bumps in it, but not on garden track laid on the ground. The front and rear engines run well together, with the front engine slipping or cutting loose every so often. When the track is wet, icy, oily or with a heavy starting load, the front engine will slip. This is fun to watch since the prototype did the same thing. A big advantage of live steam modeling is that the locomotives act so much like the prototypes. It is really something to see the front engine slip under load or hear the front and rear engine exhausts beating completely out of time, then coming into sync, only to drift off again.

The locomotive made its debut at the National Small Scale Steamup in Diamondhead, Mississippi in 1999. Everybody that saw it commented on how it looked but more so on how it ran. I was urged to pull Larry Bangham's dynamometer car with it. I have to say it took off with the dynamometer almost as if it was a normal string of cars. In the words of observers, it gave the dynamometer car a real workout. Much of the credit for this locomotive's operating success must go to those who gave vital advice in key operating areas, or at times just listened to me moan when something would not work. Many thanks to Bob Osterhoudt of Rio Pecos, Geoff Coldrick, Harry Wade, Bob Paule of Sulphur Springs, Roger Loxley of Roundhouse, and Pete Thorp of Trackside Details. I also want to thank Tom Kuhn of Packer Engineering, who showed me the ropes in the machine shop. Without these good people, I could not have made the Mallet run. I hope that some of the experiences I've had and solutions to problems that came up can be of help to other builders, regardless of what their project is. I hope this article encourages other people to try building a small Mallet. I will be giving a clinic on the construction of this locomotive at Diamondhead 2000. I hope to see many modelers there and welcome any questions on Mallet construction. They are great looking locomotives, and fascinating to watch in operation. Uintah 2-6-6-2 anyone?

Since this article was written, the Author's Rivendell and Midland railroad has been shut down, the track lifted, and the whole operation put in storage. Like the mythical Phoenix, it will rise again from the ashes once the Author and his family are settled into their new home. - ed.

Flat Diamond Stack for the Aster C&S Mogul

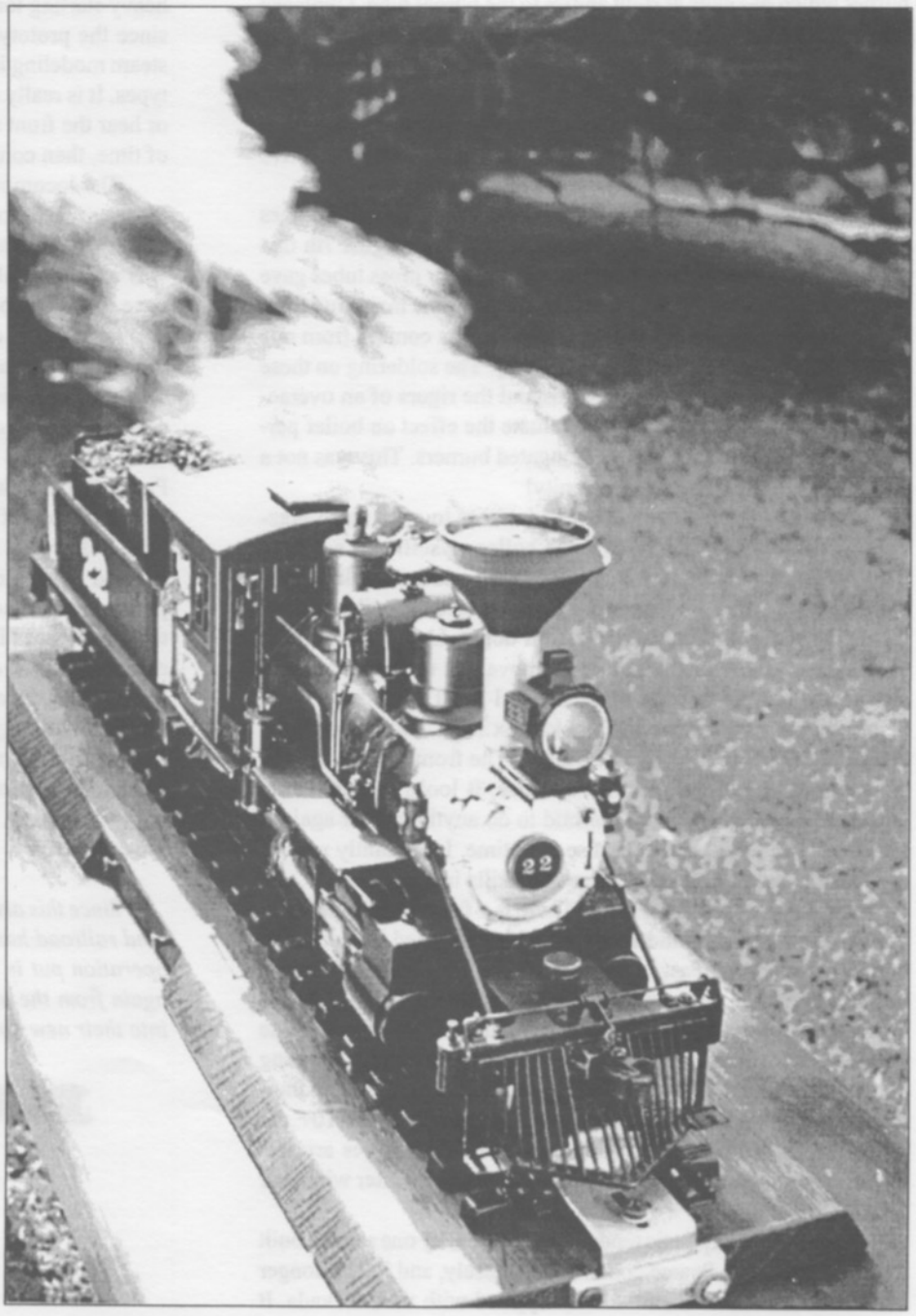
text, photos and drawings by Larry Bangham

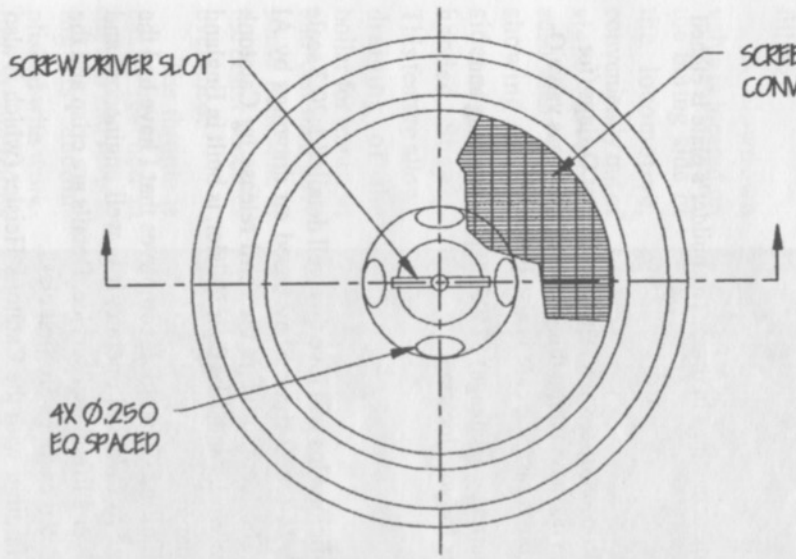
I am in the process of pre-dating my Aster C&S Mogul to the 1900 era. My main reference has been the *Narrow Gauge Pictorial Vol. VI, Motive Power of the Colorado & Southern.* The major changes have been: shortening the smoke box, narrowing the pilot deck, lowering the headlight and marker lights, and creating the diamond stack.

I incorporated a condensate deflector in the stack and the result was beyond my expectation. The engine now runs with a condensate free exhaust, even when cold and overfilled. Plus the deflector disperses the exhaust steam, which is amplified by returning the condensate to the smoke box, across the complete opening of the stack, resulting in a wide steam plume.

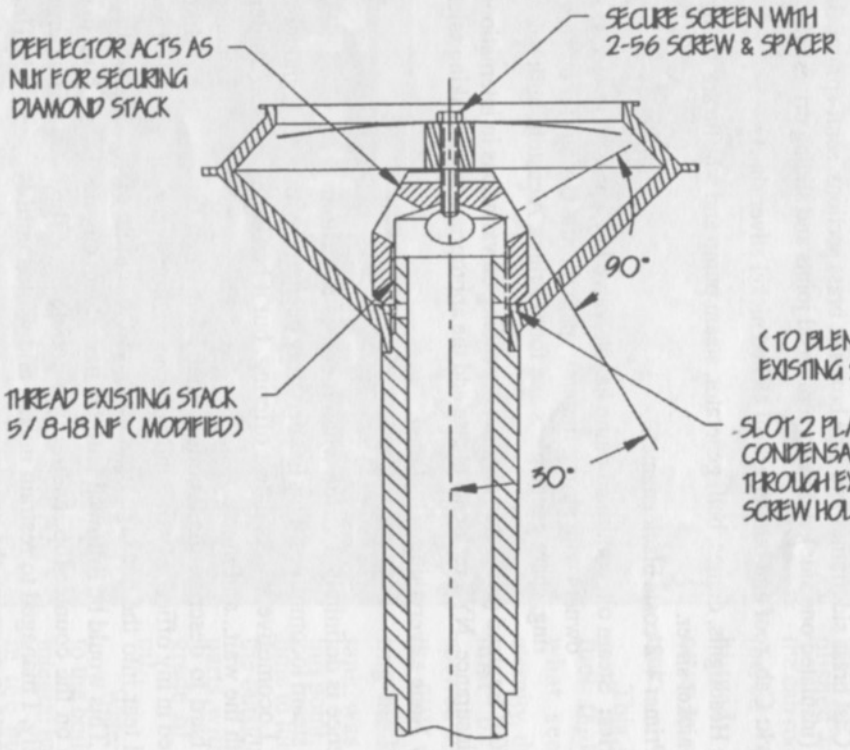
I thought some of your readers might be interested in this development, so I have enclosed a photo of the engine steaming on a test stand (roller stand) and a drawing of the stack.

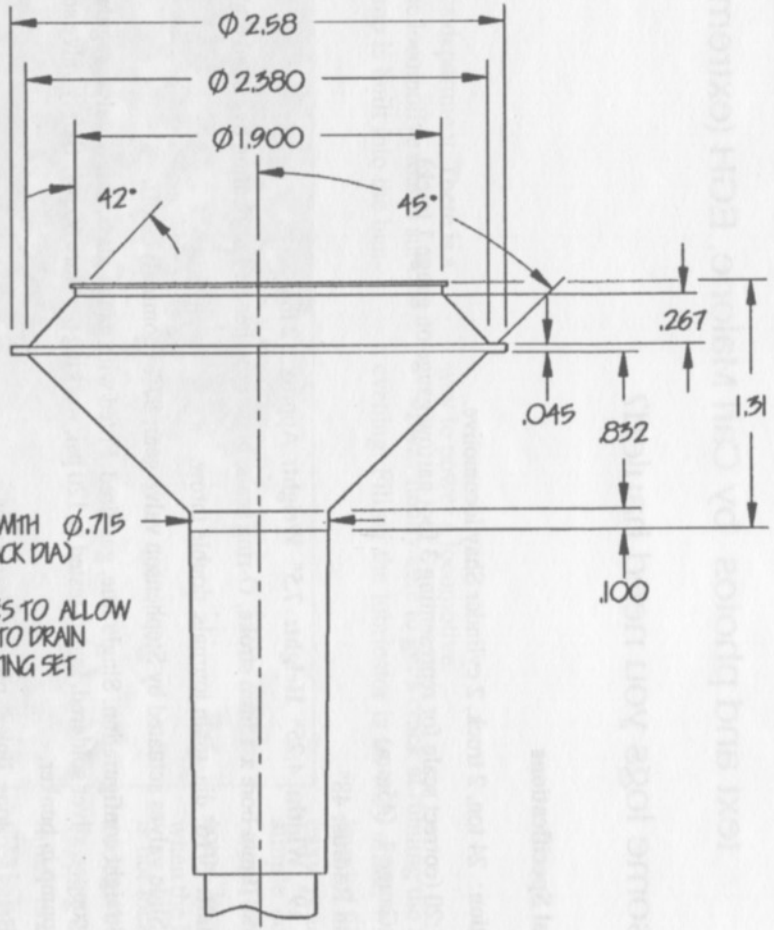
Thanks for allowing me to express my ideas through your publication.





NOTE:
1. SCALE DRAWING FOR DIMENSIONS NOT SHOWN
2. THIS STACK WILL PROVIDE A 99.99 % CONDENSATE FREE EXHAUST
3. THIS TYPE OF STACK WAS RUN ON MOST COLORADO & SOUTHERN LOCOMOTIVES, INCLUDING NO. 22 AROUND THE TURN OF THE CENTURY
4. MATERIAL. DIAMOND STACK: ALUMINUM ALLOY
   DEFLECTOR: BRASS





L. BANGHAM 8-1-96

FLAT DIAMOND STACK FOR ASTER C&S MOGUL

stack1

Catatonk 24-ton Shay

text and photos by Carl Malone, EGH (extreme gearhead)

Got some logs you need hauled?

Technical Specifications

Description: 24 ton, 2 truck, 2 cylinder Shay locomotive.

Scale: 1:20 (correct scale for representing 3 foot narrow gauge on gauge 1 track).

Gauge: Gauge 1 (45mm)

Minimum Radius: 48"

Length: 19" **Width:** 4.25" **Height:** 7.5" **Weight:** Approx. 12 lbs.

Cylinders: 10mm bore x 15mm stroke, O-ring seals, brass crossheads. Lubrication by "dead leg" displacement lubricator.

Crankshaft: 3/16" dia. main journals, double throw.

Valves: Slide valves actuated by Stephenson valve gear; 87% (nominal) cutoff.

Boiler: Straight configuration. Single flue, gas fired. Fitted with gauge glass, safety valve, regulator, pressure gauge and drain tap. All copper, silver soldered, hydro-tested to 120 psi, working pressure 60 psi. Safety valve set to 50-60 psi. Boiler feed from hand pump in bunker.

Frame: Brass sections, link & pin couplers, steps.

Trucks: Cast brass sideframes and axle boxes & brass sections, semi-sprung, 3/16" dia. axles, chemically blackened steel wheels (insulated one side), 4:1 gears, universal joints and sliding driveshafts.

Bodywork: Cab, roof and bunker are all etched nickel silver sheet.

Fittings: Headlights, domes, bell, generator, steam pump and whistle are all investment castings in brass. The builder's plate is etched nickel silver.

Finish: Primer + 2 coats black enamel.

Accessories: Steam oil, combined pump handle/valve key, spare #6 gas jet, spare Ronson filler valve, spare lubricator O-rings (for owners with strong fingers), spare throttle O-ring (for owners who insist on taking things apart), spare gas valve O-ring, spare gauge glass and four O-rings. A custom-built oak and brass carrying case is also included.

Price: FOB England (subject to change, depending on variations in international currency exchange) $2495.00 plus shipping and insurance. NYS residents please add the appropriate backbreaking sales tax for your location.

Options: None - everything is included.

Patience is definitely a virtue when it comes to custom-built live steam locomotives. This has certainly been true with Catatonk Locomotive Works' latest offering, but it has been well worth the wait...and more.

It is hard to describe the emotions that I felt when the box arrived in my office. My first thought was to drop everything and tear into the package right away in the middle of the floor. This would be followed with the new steam engine dance up on the counter top, ending in a double back flip. Fortunately, I managed to restrain myself and waited until I arrived home to examine the new prize.

Shay aficionados will love this well detailed 1:20.3 scale model of a 24-ton, 2-truck Shay based on drawings by Al Armitage. The locomotive is the third release by Catatonk Locomotive Works and, like their Heisler, is built in England by Mike Chaney.

Like all of the Catatonk locomotives that I have had the good fortune to own and operate, it is well engineered and built to deliver a lifetime of service. Details are crisp and the numerous detail castings are first class.

Those familiar with the Catatonk Heisler (which is also built by Mike Chaney) will immediately notice some family

resemblance in the steam ergonomics department. There is a large butane tank in the bunker of the locomotive that is surrounded in a water bath. A hand pump is built into the bunker, enabling one to add water while under steam. This, when coupled with the sight glass, will allow the engineer to keep the locomotive in steam indefinitely. The fuel tank is large enough to provide up to an hour of steaming on one filling.

A blowdown valve is located on the boring side of the locomotive, conveniently out of sight (have you seen many photos showing the left side of a right-handed Shay?). This feature allows draining of the boiler for transport and can also save some headache if the boiler becomes overfilled.

The throttle is easily reached in the cab and reversing is accomplished with working Stephensons valve gear connected to a proper Johnson bar in the cab.

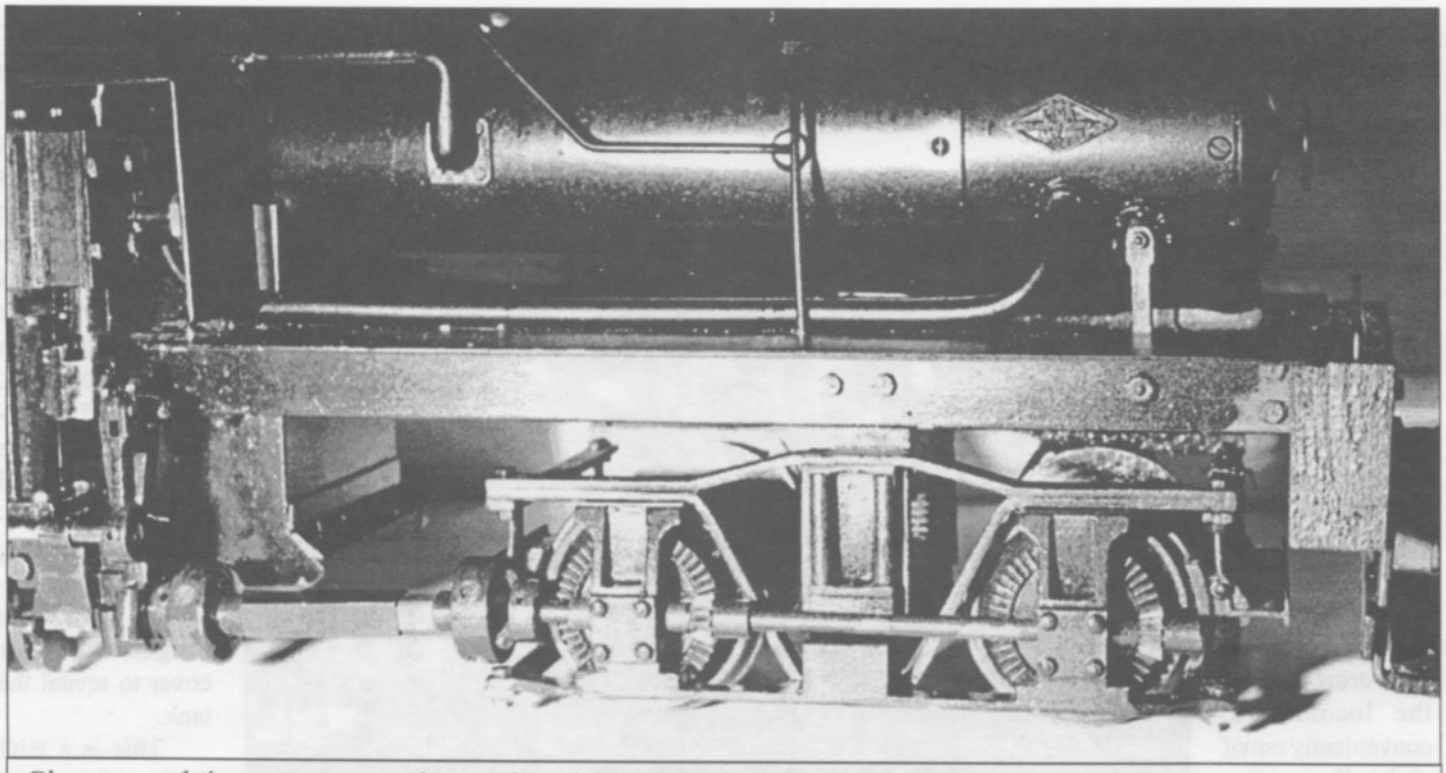
I really like the safety valve on this Shay. It is located under the steam dome out of view, and this isn't one of those dribbly, wimpy valves. When this safety valve blows, it does so with authority, sending a glorious cloud of steam skyward! This can be a great way to show off in front of your non-steam loving buddies in hopes of getting them to see the only true way to power a locomotive.

The author's Catatonk 24-ton Shay hard at work on his logging line in Texas.

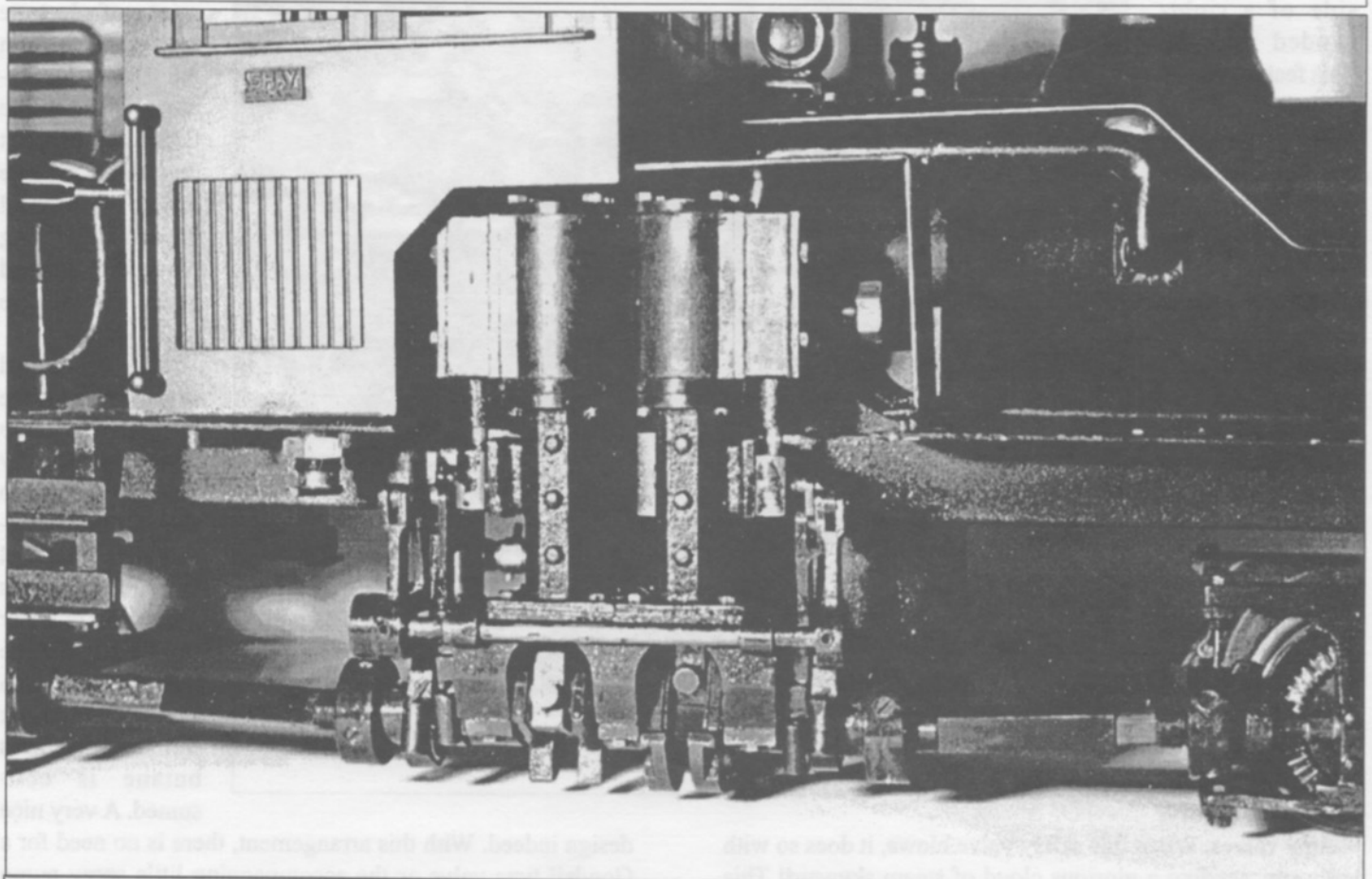
I was finally able to get a crack at running the Shay that evening. Filling the lubricator is an easy affair, with a nice knurled filler cap in easy reach. This simple act can be complicated in some locomotives when the lubricator is not located in an accessible spot. Topping off the butane tank is a straightforward task best accomplished by tilting the cab roof up, followed by the hinged bunker cover to reveal the tank.

This is a BIG fuel tank! After what seemed an eternity, the telltale mist of butane spewed forth from the filler valve letting me know the tank was full. At this point, I did take time to lubricate all the outside moving parts with a good grade of machine oil.

Water is added to the boiler via the integral hand pump in the bunker by pouring water into the bunker surrounding the fuel tank. This serves as a reservoir of water for filling the boiler, and also keeps the fuel tank from freezing up as butane is consumed. A very nice design indeed. With this arrangement, there is no need for a Goodall type valve or the accompanying little spray pump bottles that always seem to disappear at steamups. (Has anyone seen the water bottle I lost at Diamondhead this year?)



Closeup of the sprung and equalized front truck and the driveline with universal joints. Check out that classy builder's plate by Rober Dustin.



Up close and personal with the Shay 2-cylinder steam powerplant. Lots of metal in motion and enough thrashing bits to satisfy the most demanding gearhead!

While using the hand pump, the boiler level can be easily determined by checking the sightglass on the backhead.

With all the necessities in place it was time to fire up this baby! The gas control valve is controlled via a hand tool that doubles as the extension for the hand pump. The beauty in this design lies in the fact that all this is out of sight when the bunker cover is closed. After a couple of tries, flames were drawn back into the flue and the warm up process began. It did take a bit of fiddling initially as the flame would extinguish itself with liquid butane overflow. This problem goes away as everything heats up and the fuel level drops.

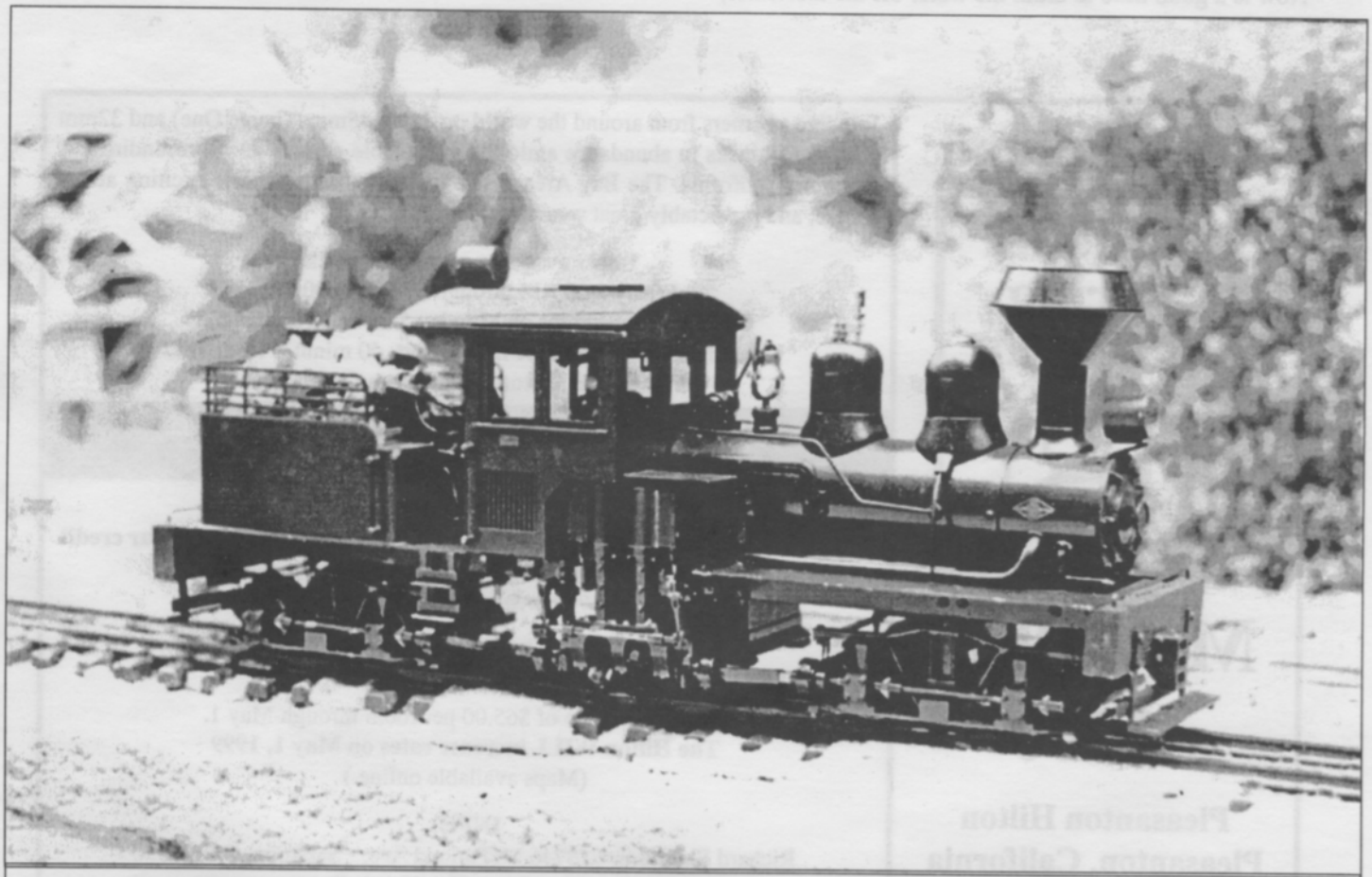
This loco has a large boiler so getting up to steam takes some time. I estimated about 10 minutes before pressure started showing on the gauge. Of course, each of these minutes seemed to take an eternity to pass. This must be attributed to the old axiom that "A watched steamer never boils".

It continues to amaze me how a cold locomotive comes alive once steam pressure is attained. It becomes a living, breathing creature that must be coaxed into motion from a deep sleep. What fun!

When 30 PSI was showing on the pressure gauge I cracked the throttle to start warming the cylinders. To clear condensation away from the cylinders, it is necessary to change the direction of the valve gear several times. Usual practice is to crack the throttle for a few seconds and close. Reverse the valve gear and open the throttle again. After three or four of these cycles, the loco started running quite smoothly. Manual operation of this locomotive is simple with the throttle easily accessible while running. It is possible to move the Johnson bar with the roof in the down position but I found it much easier to see what I was doing by lifting it up. Once in motion, the running gear is a sight to behold. This is what can transform a normal, well-adjusted live steamer into a wild-eyed, grinning gearhead! This is one cool sidewinder.

After several test runs back and forth to get the feel of the locomotive I was ready to head out on the main line. Now, my railroad can be a little unfriendly to live steam with its less than optimal curves, grades, and tunnels - but this little beast plowed right out on the main line like it was meant to be! The 4:1 gearing makes this loco very stall resistant. On any uneven trackage it tends to slow a bit and the exhaust sharpens as it digs in and powers on through. The 4' minimum radius curves are no problem with this loco, although this is about the limit before the u-joints begin to bind.

Another feature which I appreciate greatly is having sprung trucks. Again, my less than perfect trackage has been known to have an occasional bump or two along the right of way. The suspension system on this locomotive definitely



Classic Shay pose shows the wood load added by the Author. Can't make much steam without fuel!

helps to smooth this out and has prevented many derailments.

Once the loco had made it around the lower return loop, it was time to try the switchback. After throwing the points I opened the throttle all the way to see how she would respond to my unkindly 4% grade. Well, after slowing a bit, the 4:1 gearing allowed a nice crawl up the hill and into the upper return loop.

A good thing about Shays is that they spent about as much time traveling backward as forward, so having a switchback really adds to the fun factor.

After almost an hours time, the butane tank was finally exhausted and I decided to let the loco cool down. The entire run was made without a single adjustment to the gas valve. I've had a number of locomotives over the years with the gas tank located in the cab next to the boiler to overcome "cold tank syndrome" and the resultant loss in gas pressure. That system works, but constant adjustments are needed as the tank heats up. Having the tank in the bunker with a water bath is a welcome improvement and has the added benefit of freeing up cab space.

After the run, be sure and add some water to the bunker because as the boiler cools, the vacuum created will automatically refill the boiler with a great slurping noise. Warning: this can raise a few eyebrows the first time it is experienced and may be good for a few impromptu jokes.

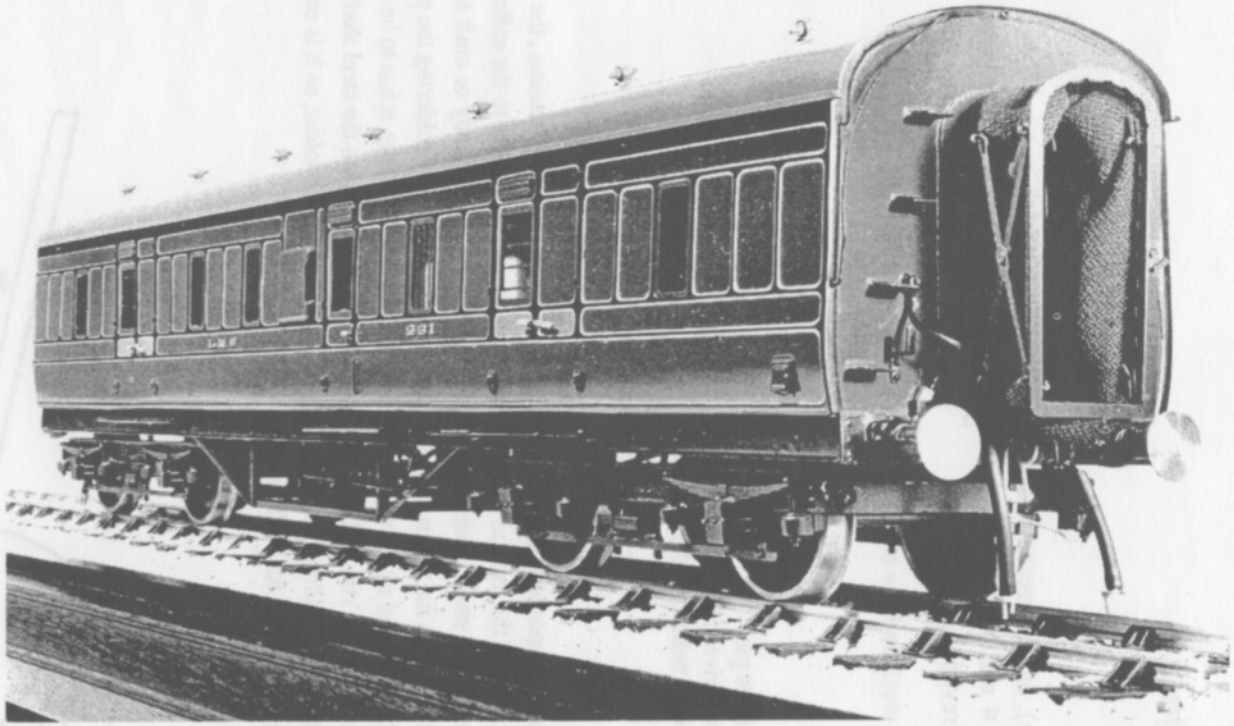
Now is a good time to drain the water off the lubricator, as this is much more easily done while things are still warm. Here we find another positive in the steam ergonomics department. The lubricator draining is accomplished by simply unscrewing the drain plug a couple of turns until the water begins to drain. Be sure and do this with the throttle valve in the closed position or the entire contents will spew out at once. I appreciate not having to use a wrench or screwdriver for this task, and that the drain plug doesn't have to be completely removed. I believe that there are several runs worth of oil in the reservoir so one should be able to run for several hours before replenishment.

Wiping down the locomotive and removing any stray botanical debris that may be lodged in the running gear completed the running session.

I am really hard pressed to find anything negative about the locomotive aside from a leaky blowdown valve that showed up on the first steaming. A phone call to Catatonk promptly had a replacement part on the way and the problem was solved. This latest release from Catatonk Loco Works is a great running and great looking piece of engineering. Highly recommended!

L. M. S. Period Piece...

D. 1778 Gangwayed Passenger Full Brake in Period I livery.
Beautifully presented in 1:32 scale (GAUGE 1)



Built in the 1920's by the London Midland Scottish Ry (LMS) the Corridor Full Brake built to plan D. 1778 was almost a pure extension of Midland Railway coach design and construction practice down to the sumptuous livery of Black, Gold, and Crimson Lake. Some cars entered British Railways ownership in 1947. Our model is available in three paint schemes; LMS Period I (shown), LMS Period II (simplified lining), and B.R. maroon. If you need a parcels or luggage van of distinctive design this Full Brake is for you.

At a glance specification summary:

- **Length over buffers: 510mm**
- **Availability: April 1997**
- **Wheels: steel insulated finescale**
- **Finish: hand painted and lined**
- **Weight: 1.6 Kg**
- **Material: 95% brass, including roof**
- **Price: £ 660 plus shipping**

THE FINESCALE LOCOMOTIVE COMPANY

MARLBOROUGH, WILTSHIRE, ENGLAND

Exclusive US Representative:

I E & W Railway Supply
38200 Charles Town Pike
Purcellville, VA 20132-2927
Phone: (540) 882-3886 FAX: (540) 882-9670

21 Inexpensive Modifications to the BAGRS Project Loco

article drawings and photos by John Thomson

Part 2

Enhancements to a fun project...

CORRECTIONS

Due to an editorial error (that would be me), an incorrect version of Part 1 of this series was published in the last issue. Changes have been made to Mod. 1, Mod. 4 and Mod 6, so we are reprinting those Mods in this issue, followed by the continuation of the series...from the *correct* revision. - *ed.*

1 Replace the disc pin and drive shaft with steel, and use solder in place of superglue ($ 1.10)

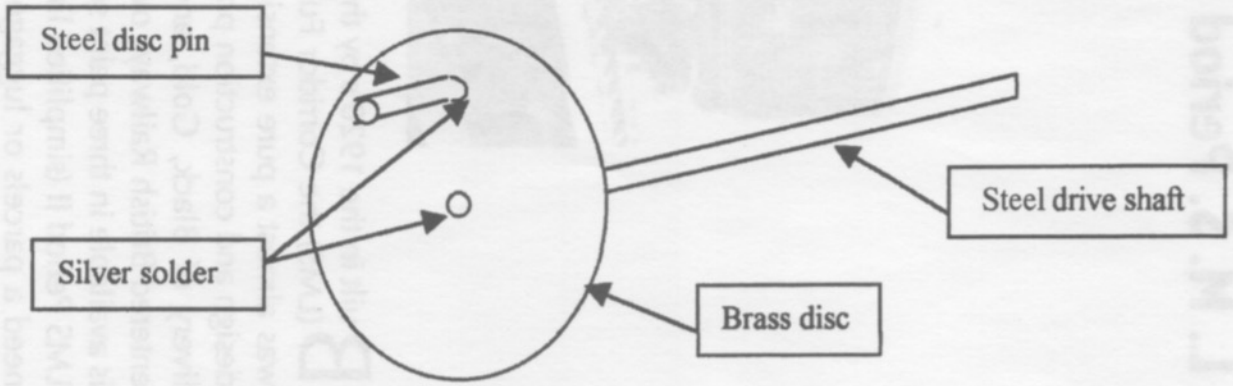
Materials list:

- .062" x 1/2" long steel music wire (disc pin)
- .125" x 1.1/2" long steel music wire (drive shaft)
- Stay-Brite™ (4%) silver solder used to build the Midwest kit

Procedure:

The Midwest steam engine was designed for display purposes and occasional use. After several hours of running , the brass disc pin and drive shaft will become excessively worn and grooved at the rod and main bearings (bushings). This is due to the softness of the brass. A simple solution is to replace the brass pin and shaft with steel music wire, which is available at any hobby or craft shop. Also, the CA adhesive holding the disc pin and drive shaft to the disc on the steam engine will eventually loosen. By soldering the pin and shaft to the disc with silver solder, you can avoid this problem. The steel music wire will solder to the brass; however, it has to be sanded with a fine emery cloth (#150 grit or higher) to expose a clean surface. You will find the flywheel will press fit onto the steel shaft tightly enough to not come loose in normal usage. If the flywheel requires bonding, use CA adhesive rather than silver solder, as it is easier to remove the flywheel, should you need to service the steam engine in the future (Figure 1).

Figure 1



4. Add a blower/blast tube. ($ .50) Directing the engine exhaust into a blast tube in the stack will draw the fire and make it burn hotter. The result will be a considerable improvement (several psi) in the power and performance of the steam engine.

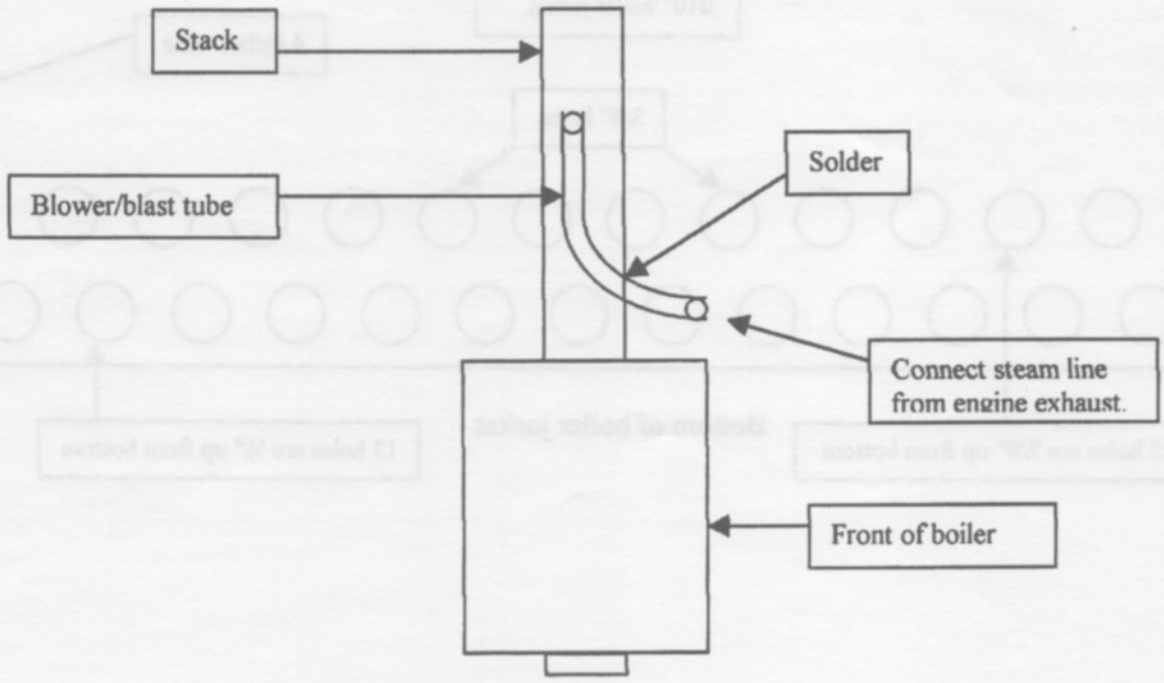
Materials list:

- 1.1/2" length of 1/8" o.d. brass tube
- Tubing bender (Biso Bender Model BND018, available from hobby shop for $4.99)
- Medium silicone tubing
- 45% Silver Solder Paste (Sulphur Springs p/n WSX4505)
- Mapp Gas Torch (Bernz-O-matic Model JTH7, or similar)
- # 32 drill bit

Procedure:

Using a #32 bit, drill a hole in the front side of the stack about 3/8" above the boiler (refer to figure 4). Use a needle file to enlarge the hole enough so the blast tube will fit snugly and hold itself in position while soldering. In order to bend the brass tube, it will have to be softened by annealing. To do this, place the tube on a firebrick and heat with a propane torch until it glows orange. Allow to cool slowly. After the tubing is cool, bend into a 90° "J" shape, using the Biso Bender. If you have not yet built the Midwest boiler kit, it will be easy to silver solder the blast tube into the brass stack. Note: Because of the higher stack temperatures generated by the blower/blast tube, 45% silver solder MUST be used for this modification. Press the tube into the stack such that the top of the "J" is pointing upward inside the stack. Using the silver solder syringe, squeeze a 1/16" bead of silver solder paste around the blast tube/stack joint. Using the Mapp gas torch, heat the joint until the silver solder melts and flows evenly around the joint. If your boiler has already been soldered with 50/50 or Stay-Brite™, you will need to completely fill the boiler with water (no air space) in order to avoid melting the solder holding the boiler together. With a water filled boiler, you MUST use a Mapp gas torch in order to generate enough heat to melt the silver solder paste at the blast tube/stack joint. Stand the boiler upright prior to soldering the blast tube, in order to keep the water level at maximum. Also, do not cap the boiler, as there will be some heating and expansion of the water during the soldering procedure. After the boiler cools and is reassembled to the jacket, connect the engine exhaust to the blower tube with silicone tubing. Because the blast tube will cause the steam pressure to run several psi higher, a safety valve is recommended (Modification #20). In order to monitor the higher steam pressure, a pressure gauge is recommended (Modification #14).

Figure 4
Right side view of boiler



6. Heavier boiler jacket. ($2.00)

The boiler jacket modification in the project loco plans (page 8, drawing #4) calls for adding holes to the original Midwest jacket, and enlarging them to 7/16". This hole placement will allow flames to come out through these holes and literally burn the mahogany strips during operation of the loco. Also, the .005" brass boiler jacket material supplied with the Midwest kit is very thin. By the time you add and enlarge the holes in the jacket, the structure becomes so weak it will collapse the first time you "lean" on the boiler to attach steam lines, etc. The solution to this is to fabricate a new jacket out of thicker brass sheet, and relocate two rows of 3/8" holes near the bottom edge. If you build the 3-wick alcohol burner (Modification # 8), you will need to add additional holes in order to supply sufficient air for the burner to work properly (see Figure 6 below). When you reinstall the boiler in the jacket, you will also need to make sure the bottom of the boiler is 2" above the bottom of the jacket, in order to allow adequate space for burner flame height.

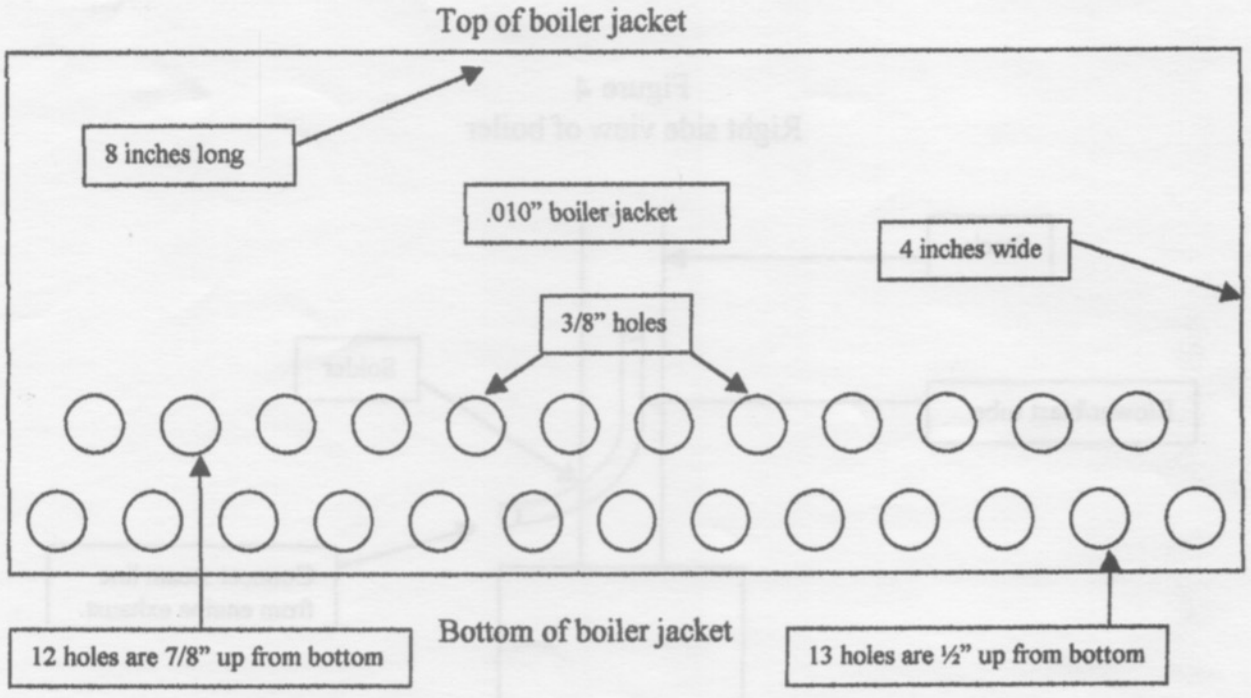
Materials list:

- .010" x 4" x 10" sheet brass (K & S Engineering Brand - MJDesigns)
- 3/8" hole template

Procedure:

Cut off two inches from the 10" length of sheet brass, and it will be the proper size (4" by 8") for the boiler jacket. Place a mark 1/2" up from the bottom of the new jacket at each end. Then, draw a line between these two marks. Using the original jacket as a pattern, simply position the 13 hole pattern on the line just drawn on the new jacket. Mark the center of each of the thirteen holes onto the new jacket. Then, mark the centers of the 12 additional holes on a line 7/8" up from the bottom of the jacket.. Use a 3/8" hole template and an ultra fine permanent marker to trace the hole size for all 25 holes onto the brass jacket. In lieu of a punch, I drilled the holes to 3/16" and reamed them out to 3/8" with a Dremel™ rotary tool and # 194 high speed cutter or #9901 tungsten carbide cutter. Do not try drilling the holes out to 3/8", as the bit will tend to tear the brass sheeting. To maintain the structural strength of the jacket, offset the centers of the second row

Figure 6



of holes (see Figure 6).

7. Replace supplied steel screws with brass and paint the engine mainframe for a better appearance ($1.00).

The engine mounting and boiler band screws and nuts that come with the Midwest kit are plated steel. Discard these. Since the boiler jacket, bands, and all engine parts are brass, it looks better to have all brass hardware. Paint the mainframe of the engine black, or, another color of your choice.

Materials list:

- 4 - #2 x 1/4" brass wood or metal screws (engine mounting)
- 2 - #4 x 3/8" brass machine screws and nuts (boiler bands)
- High temperature spray paint (Plastikote Engine Enamel, 500 degrees F.)

Procedure:

Replace supplied steel engine mounting and boiler band screws with brass. If you choose to paint the mainframe, be sure to put masking tape on the valve face before painting.

8. Replace sterno burner with a meths (alcohol) burner. The sterno firing results in marginal performance for the loco. It will barely pull its own weight on a level track, let alone a few cars. For about $14.00 worth of brass materials, you can build a 3-wick meths burner that will give the loco plenty of power. In fact, it will run so fast, you may want to add a throttle valve (see Modification #10). WARNING: THE METHS BURNER WILL CAUSE THE BOILER TO OPERATE AT SEVERAL PSI HIGHER THAN THE STERNO BURNER. A SAFETY VALVE IS RECOMMENDED. THE SAFETY SHOULD BE SET TO BLOW AT 25 TO 35 PSI. IF YOU WOULD RATHER BUILD YOUR OWN SAFETY VALVE, REFER TO MODIFICATION #20. ALSO, IT IS IMPORTANT TO USE THE FUEL LINE CLIPS SUPPLIED WITH THE LOCO KIT. THESE SHOULD BE PLACED ON THE LINE ATTACHED TO THE BOILER VENT.

Materials list:

- Acme U2 (2 oz) brass fuel tank (for control line model airplanes)
- Black spray paint - Plasti-kote Engine Enamel, 500 degrees F.
- 2" diameter brass disc burner base (cut from .015" brass sheet stock)
- 3 ea., 7/8" long burner tubes (cut from 3/8" brass tubing stock)
- 1" fuel fill tube (cut from 3/8" brass tubing stock)
- 2 ea., 5/8" long fuel distribution tubes cut from 1/8" i.d. (5/32" o.d.) brass tubing
- 1.5/8" fuel line cut from 1/8" i.d. brass tubing
- Fuel tank patches cut from original .005" brass boiler jacket
- Wick material: 3" x 6" stainless steel wire cloth, 100 Mesh (Part # MZL-10l, Sulphur Springs Steam Models, Ltd)
- 12" x 12" ceramic fiber paper (Part # MPC-21, Sulphur Springs) Note: this same material will be used for boiler lagging in Modification #17
- Sta-Brite™ silver solder, flux, and propane torch
- Firebrick (same as used to solder the boiler)
- 3/8" diameter plastic plug

Figure 8a
Alcohol Burner, Top View

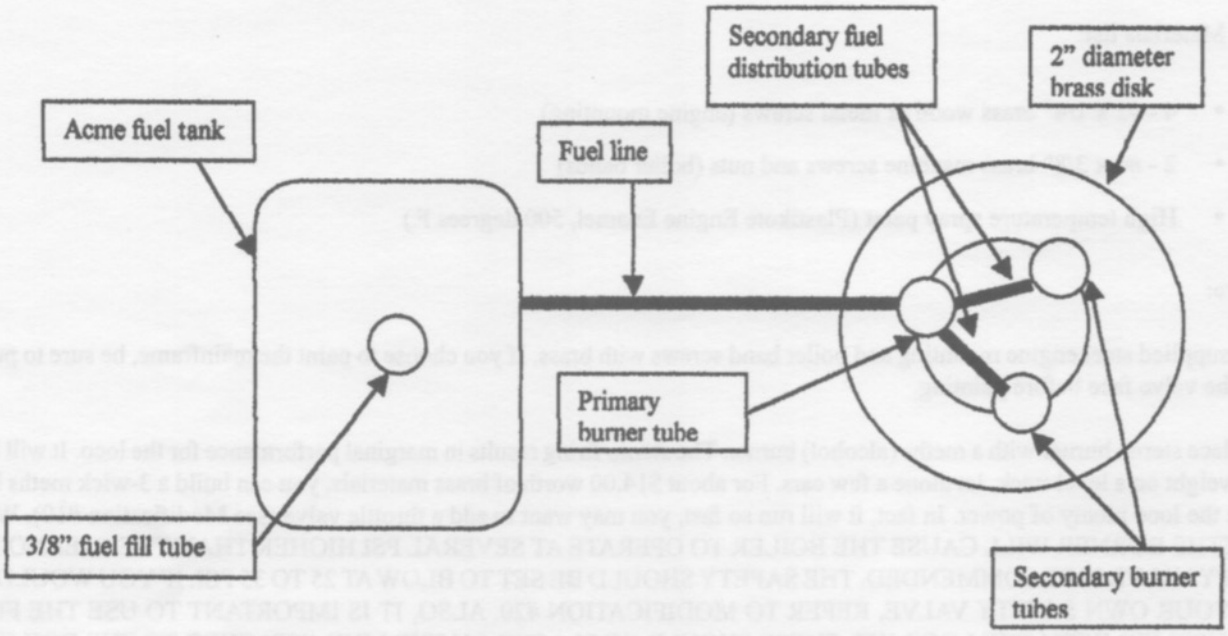
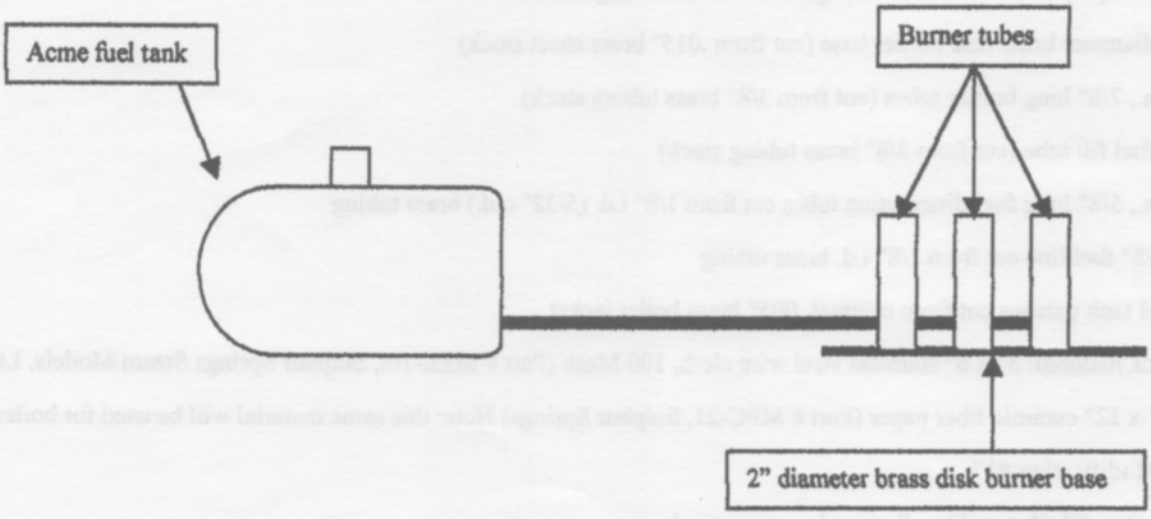


Figure 8b
Alcohol Burner, Side View



Procedure:

Refer to Figures 8a and 8b. Using the propane torch, melt the solder holding the three existing fuel fill, overflow and supply tubes to the tank. Pull the tubes out and discard. Grab the tubes with pliers before heating so they won't drop inside the tank, and so you won't burn your fingers.

Cut small brass patches slightly larger than the holes left above and silver solder them over the holes. Use brass from the .005" sheet supplied with the boiler.

Cut three 7/8" lengths of 3/8" brass tubing. These will be the burner tubes. Drill 5/32" holes 1/8" from the bottom end of each tube. In one of the tubes only (primary burner), drill two more 5/32" holes on the opposite side (not end) of the tube from the hole just drilled. These two holes should be spaced 60° apart to properly direct the distribution tubes to the two secondary burner tubes.

Trace and cut out the 2" diameter brass disc. Position the drilled ends of the burner tubes on the disc, spaced 120° apart, in an equilateral triangle pattern. The burner tubes should be centered on a 1" circle drawn inside the 2" diameter brass disc (Figure 8a).

Install the two 5/8" long fuel distribution lines between the two secondary burner tubes and the primary burner tube.

Lay the above parts out in position on a firebrick and silver solder the three burner tubes to the 2" disc, and the distribution lines to the burner tubes. Do not solder the fuel line to the primary burner tube at this time.

Drill a 1/8" hole for the fuel line on the large flat side of the fuel tank. The hole should be drilled off center and as close to the bottom as possible.

Drill a 3/8 "hole in the center of the top of the tank for a fuel fill. For now, friction fit the 1" fuel fill tube into this opening approximately 5/8" (3/8" left sticking above the tank).

Insert the 1.5/8" fuel line into the remaining hole of the primary burner. This will be the fuel line to the tank.

Insert the other end of the fuel line coming from the burner into the fuel tank about 1/2".

Remove the Sterno™ fuel cup from the loco and trial fit the burner on the loco in place of the fuel cup, placing the tank down on the rear of the loco frame, with the rounded portion of the tank facing the rear. Cock the burner slightly so that the fuel line will just go by the rear fuel pan peg. If you build the coal bunker (Modification #9), it will provide a place for the tank. Once the proper positioning of the tank and burner is established, mark the fuel line at the tank and burner ends, transfer the assembly to the firebrick and silver solder both ends of the fuel line.

Note: the fuel line length given above (1.5/8") is designed for center mounting of the boiler to the loco frame. If the boiler is to be mounted in another position, the fuel line length will have to be adjusted accordingly.

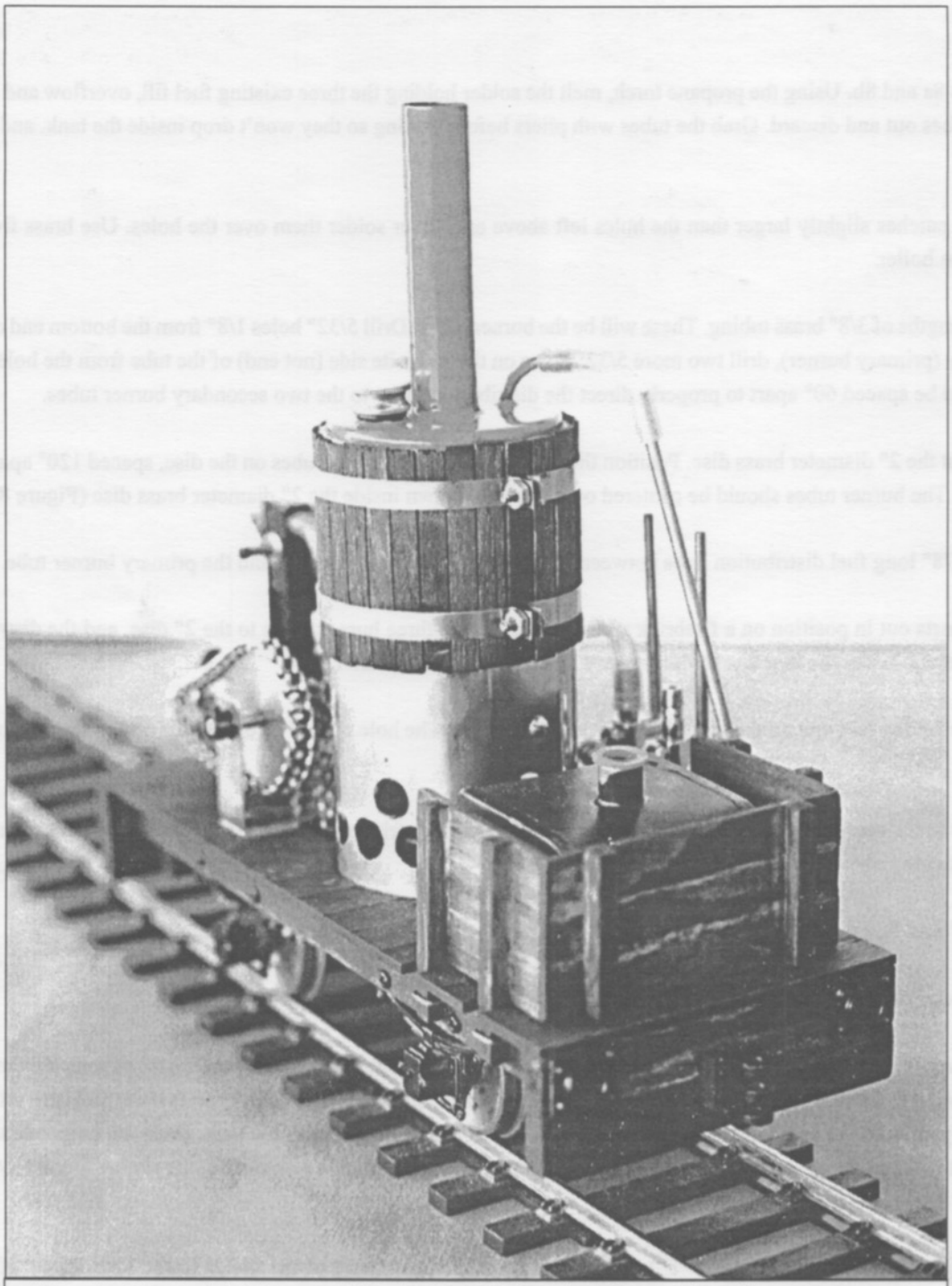
Now fill the fuel tank with water and check for leaks at the soldered joints. Also, fill the tank such that the water level in the burner tubes is aproximately 1/8" below the tops of the tubes. Adjust the height of the fuel fill tube so that the bottom of the fill tube just touches the water surface. Drain the water from the tank/burner assembly and silver solder the fuel fill tube in place. When fueling with alcohol, don't fill higher than the bottom of the fuel fill tube, otherwise alcohol will overflow the burner tubes during operation. This could result in a fire on the wood loco frame!

Paint the burner black, or a color of your choice, using the high temperature spray paint.

Although fiberglas wick material works very well in this burner, a more permanent and consistent burning wick can be made from ceramic fiber paper and 100 Mesh stainless steel wire cloth. Cut three pieces of the ceramic fiber paper and three pieces of the wire cloth to a size of 7/8" x 2.5/8". Place one length of paper on top of a length of cloth. Using a 1/16" drill bit as a core, roll the paper and cloth up

together as tightly as possible. The wire cloth should end up on the outside of the roll. Remove the drill bit and stuff the rolled up wick into one of the burner tubes. Construct two more wicks in the same manner. All three wicks should stick up more than 1/16" above the burner tubes. Using a rotary tool with an abrasive cutoff wheel, trim the wicks so that only 1/16" sticks up above the top of the burner tubes.

Using a syringe, fill the tank with approximately 40 ml of denatured alcohol up to the bottom of the fill tube. The wicks should become wet with alcohol. Check to make sure there are no alcohol leaks. If not, light the wicks. All three should burn evenly with a flame approximately 1" tall. For a fuel tank cap, find a suitable plastic plug or cap to fit the 3/8" fuel fill tube. Be sure to drill a small vent hole in the cap so that fuel will feed properly. It will also be necessary to notch the bottom rear side of the boiler jacket to accommodate the fuel line. A Dremel™ tool with #194 high speed cutter works well to do this. Make sure the bottom of the boiler is at least 2" above the bottom of the jacket, to allow room for burner flame height. By using 3.1/2 oz. of water in the boiler (maximum recommended by Midwest), a tank of fuel should run out before the water does. If the fuel runs out before the water, the loco will gradually slow down and come to a stop. If the water runs out first, the loco will come to an abrupt stop. If you find that you are running out of water first, use less fuel. The boiler can be damaged (solder joints melt) by running dry. The loco will easily run 15-20 minutes or longer. With the 3 wick burner and weight addition (Mod #11), the loco easily pulled seven large gauge 1 boxcars, or ten small 4-wheel cars on the large loop at Diamondhead 1999!



The Author's highly modified BAGRS Project Loco is a fine and powerful steamer. It looks great with a train of small 4-wheel cars, the price is within reach of even the tightest budget, and there's the satisfaction of saying, "I built it myself!"

Instant Climax Developments

text and photos by Keith Manison

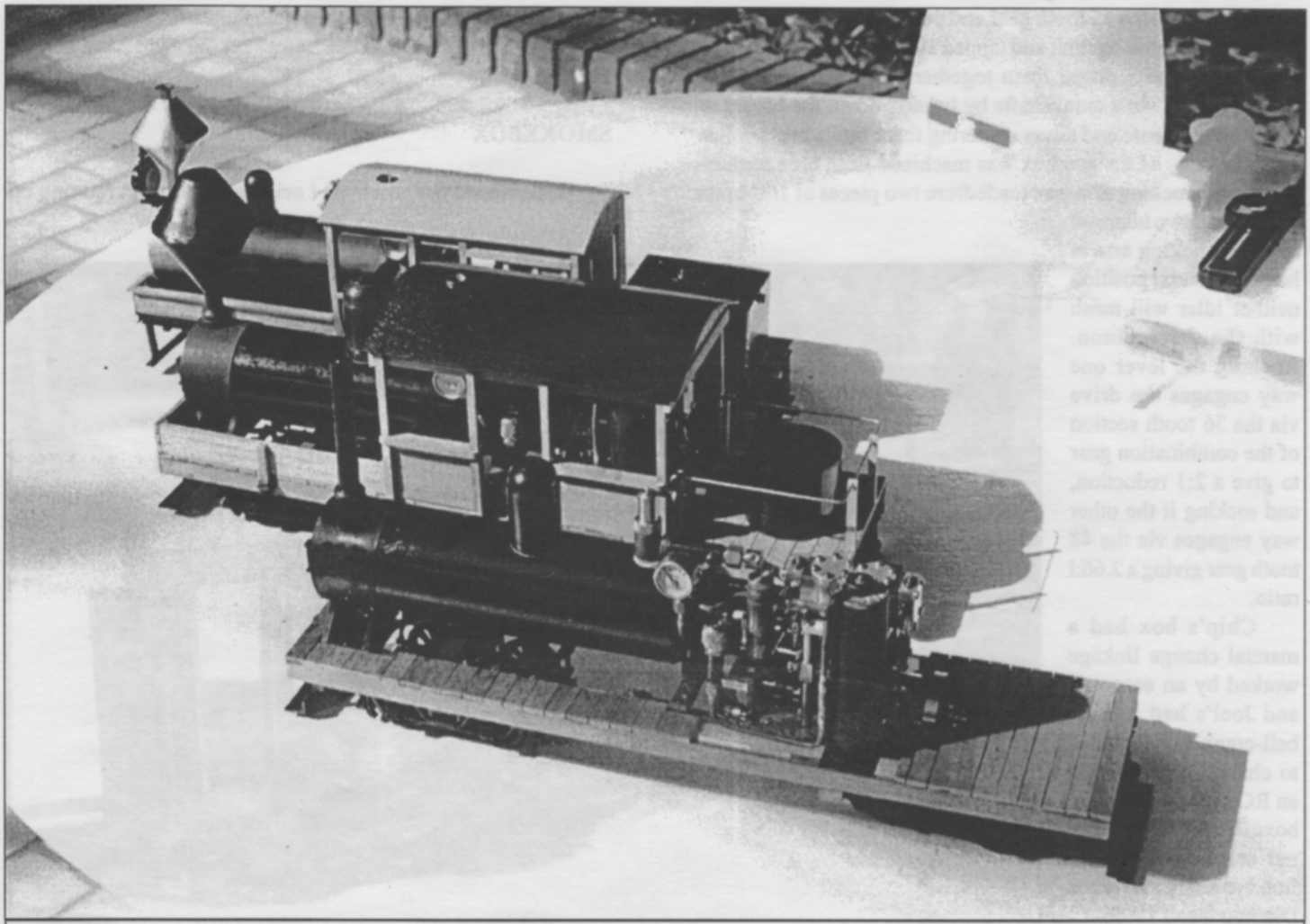
A followup.....

Since the very successful run of the first INSTANT CLIMAX at Diamondhead in 1998 I have developed a two speed gearbox and built two more locomotives. These were constructed a little differently from the first attempt, although they retain the main features - VPC trucks, Graham twin and Roundhouse boiler. I will describe some of the improvements and developments.

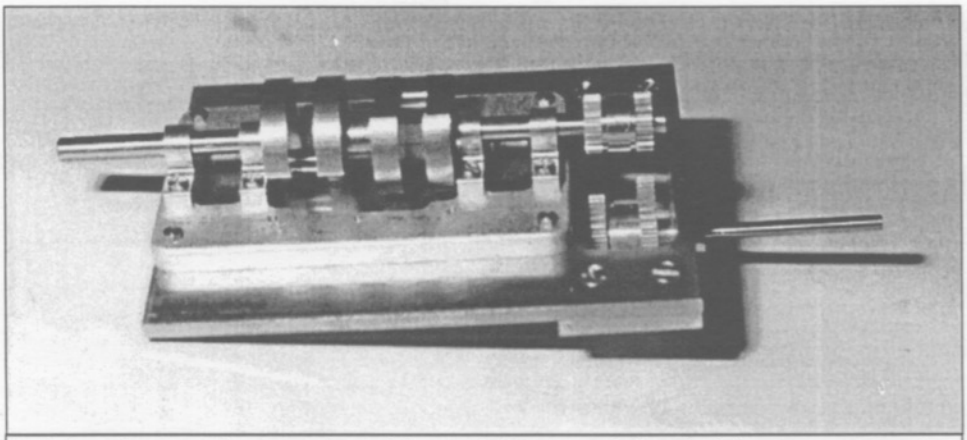
TWO SPEED GEARBOX

I was asked by Chip Rosenblum and Joel Neshkin to make gearboxes for them to incorporate in their own locomotives. I took the opportunity to take the original design and turn it into a two-speed box. The design is similar in principle to the original gearbox in that an idler gear is in constant mesh with the output drive gear. This idler can be rocked into mesh with a pinion on the crankshaft of the Graham twin.

For the two speed box I fabricated a combination gear by



The Instant Climax trio. At the back is the original engine. Next is the Climax with the full cabin, and the one in front just has a platform.



This photo shows the drive pinion and final drive gear. Both are made from standard Boston Gear parts that have been machined and joined together. The dual drive pinion is silver soldered. The final drive gear is made by pressing the two gears on a common bushing and screwing them together.

first machining a collar that was tight push fit in the boss of a 48 tooth gear and drilling this out for the 1/8" drill rod final drive shaft. The collar was longer than the boss and so I could machine the boss off a 36 tooth gear and push that on the collar too. I then drilled, countersunk and tapped 10BA holes in the combination gear and screwed them together. A double pinion was made for the twin's crankshafts by turning down the bosses of two 18 tooth gears and silver soldering them into a brass collar.

The body of the gearbox was machined from bronze channel and the rocking arm was made from two pieces of 1/8" brass bar and had two idlers on it. If the rocking arm is held in a central position neither idler will mesh with the drive pinon. Rocking the lever one way engages the drive via the 36 tooth section of the combination gear to give a 2:1 reduction, and rocking it the other way engages via the 48 tooth gear giving a 2.66:1 ratio.

Chip's box had a manual change linkage worked by an eccentric and Joel's had a brass bell-crank as he wanted to change speeds using an RC servo. Both gearboxes ended up in original creations by these fme modelers and ran at Diamondhead 1999.

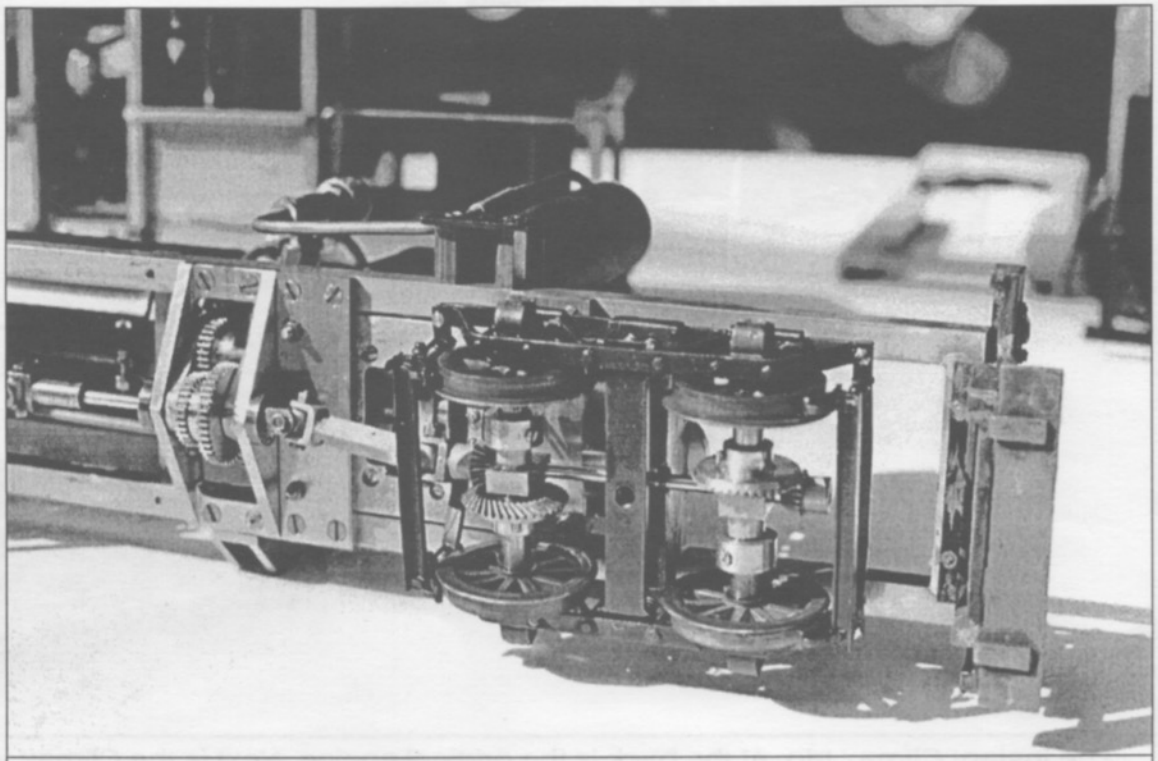
Since then I have further improved the design by making the combination pinion with an 18 tooth and a 15 tooth gear. The 15 tooth gear meshes with the 48 tooth gear on the final drive for a 3.2 reduction ratio. The final reduction ratios at the wheel are 4:1 in high gear and 6.4:1 in low gear. The gear change mechanism now has positive detents for high, neutral and low gear positions provided by spring loading the lever and having a 3/32" ball bearing drop into shallow dimples at each position.

LOCO FRAMES

Although the first loco was to be a quick build, the milling out of the plate for the twin was a lot of work for the little Sherline mill. So for the new locos I decided to take the VPC frame design and modify it a little. I built two frames to the same basic VPC design with the space between the longitudinal members increased from 1.3/8" to 1.7/8" to accommodate the Graham twin's baseplate between them. Cross members were used to mount the twin and the new two speed gearbox was bolted up from underneath. A manual speed change lever was fixed to the frames on the right-hand side of the engine.

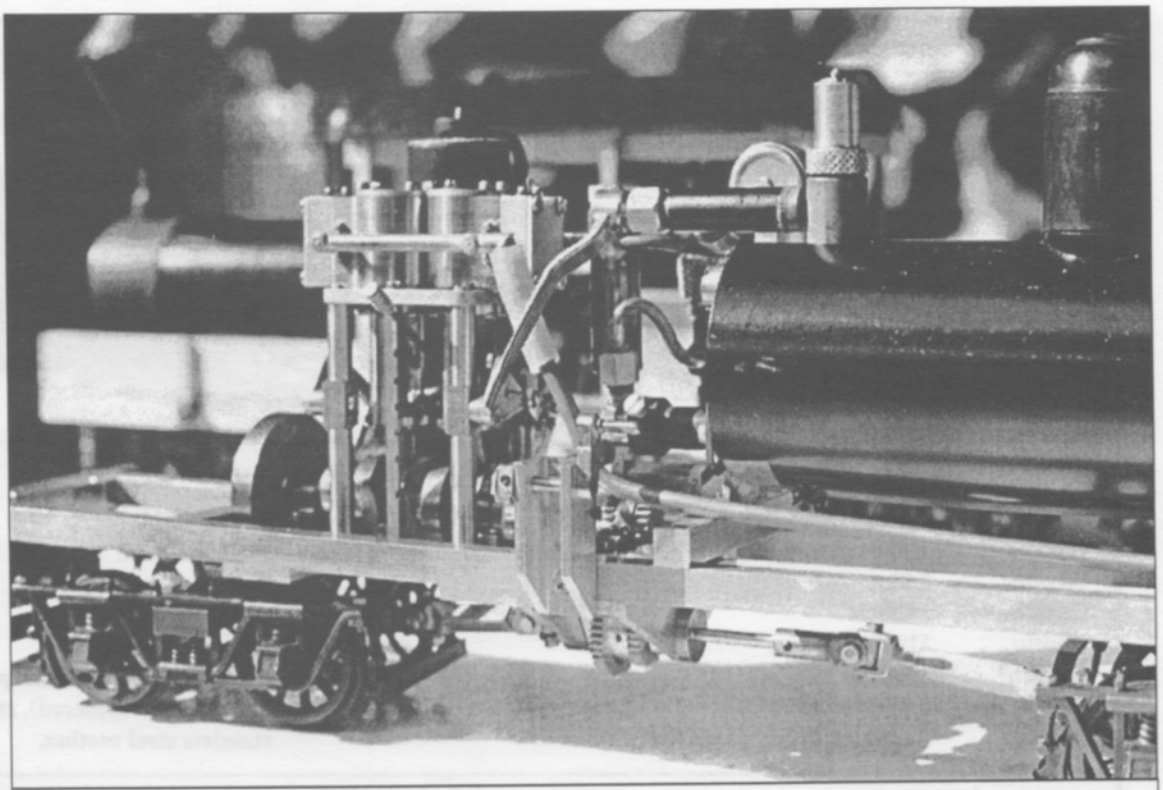
SMOKEBOX

I mentioned the problems I originally had with lighting up



The gearbox mounted under the frame of the locomotive.

the first INSTANT CLIMAX, and the need for an opening smokebox. For the two new engines I made hinged smokebox doors that certainly made lighting up easier. I also re-read the Roundhouse boiler instructions and discovered that they recommend a fairly large hole in the bottom of the smokebox to aid flame stability, etc. I ended up designing a completely new smokebox and mount with the required hole. Firing up was easy with this new design.

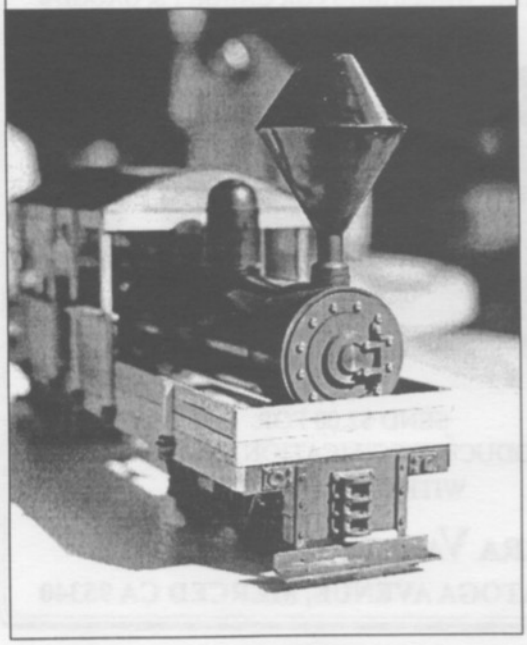


This view shows the gear selector mechanism on the right side of the locomotive. With the lever up, as shown, the loco is in low speed gear. When in neutral the lever is horizontal and sticks out of the cab door. Down is the high speed position.

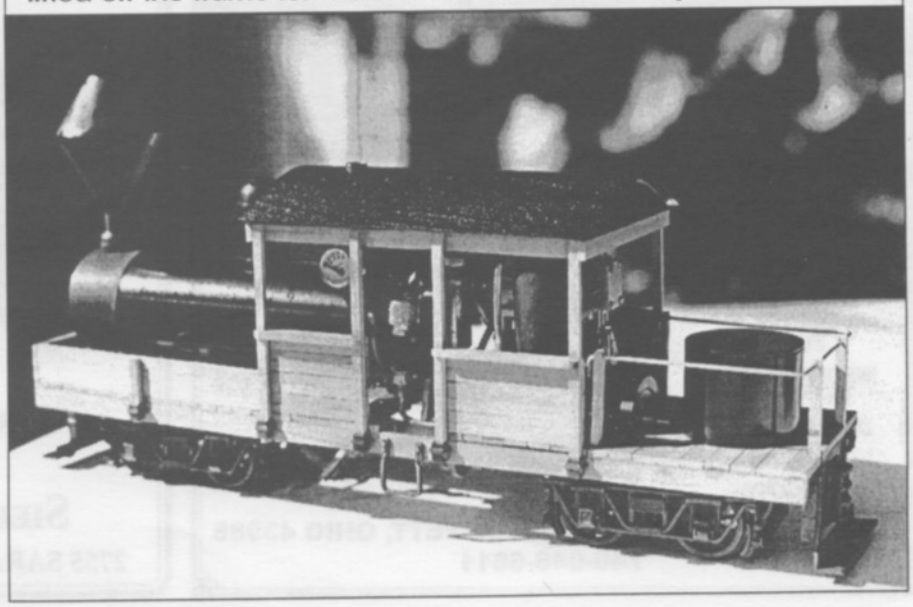
COMPLETED LOCOMOTIVES

I completed one of the new locos with an open cabin, diamond stack and dummy round water tank. The other was just provided with a wooden platform and straight stack. The final touches were being put on at 1:00 a.m. of the morning I was flying to Diamondhead! But I made it and had the original and two new Climaxes running at Diamondhead 1999. Chip and Joel had their locos there too and we had a blast Climaxing at Diamondhead!

The new smokebox with its hinged door.



This photo shows the locomotive with its "clothes" on. The cabin can be lifted off for servicing and firing up. The floor can also be lifted off the frame for more extensive work if required.



LIVE STEAM MODEL

'Bantam' Mine / Quarry Locomotive
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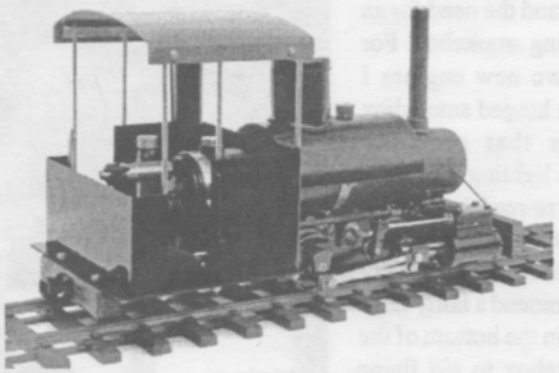
Pressure Gauge



SPECIFICATIONS

Scale:	**1.20.3 (15mm/ft)**	**Cylinders:**	**2-7/16" x 1/2"**
Gauge:	**1(45mm) and 0(32mm)(re-gaugeable)**	**Valve Gear:**	**Slip Eccentric**
Weight:	**2.2kg**	**Fittings:**	**Safety valve, Regulator**
Length:	**280mm**	**Firing:**	**Butane Gas**
Width:	**110mm**	**Lubricator:**	**Displacement type**
Height:	**135mm**	**Materials:**	**Bronze cylinders, brass platework, copper boiler (silver soldered), steel frames, stainless steel motion.**
Radius needed: 600mm (2ft)			
Boiler:	**Capacity 100cc single flue**		

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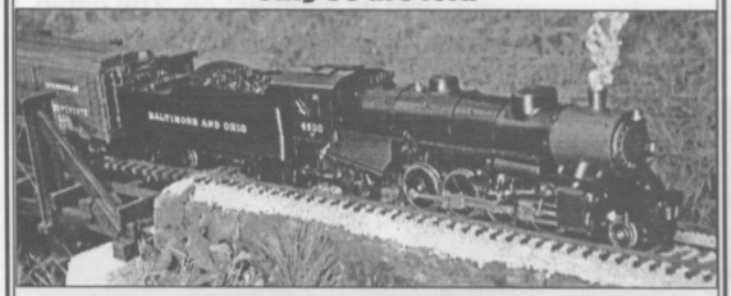

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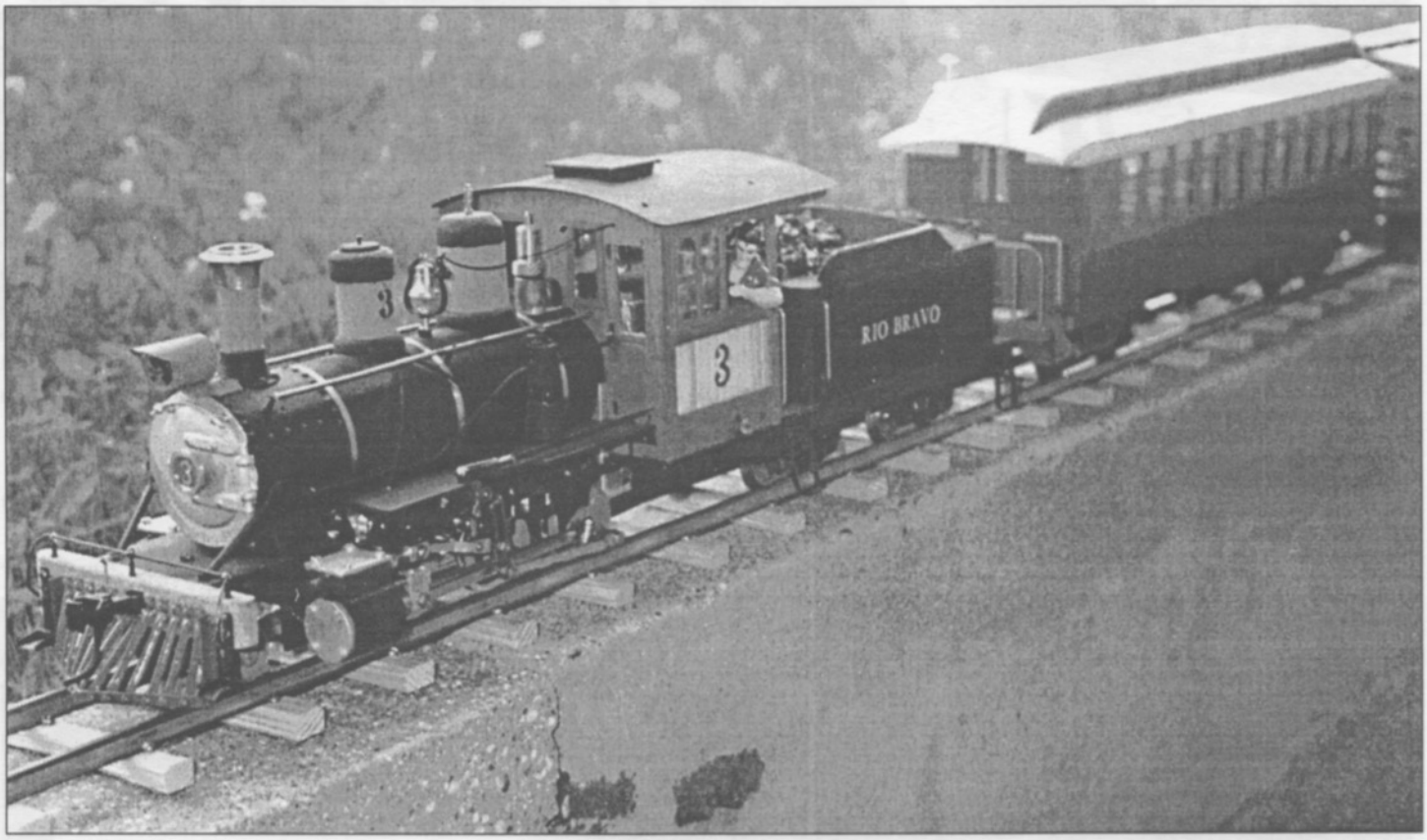
Allan Starry ponders the lineup on the steaming bay at Jim Hadden's '99 steamup. *Photo by Carol Simpson*

Steam Scene...

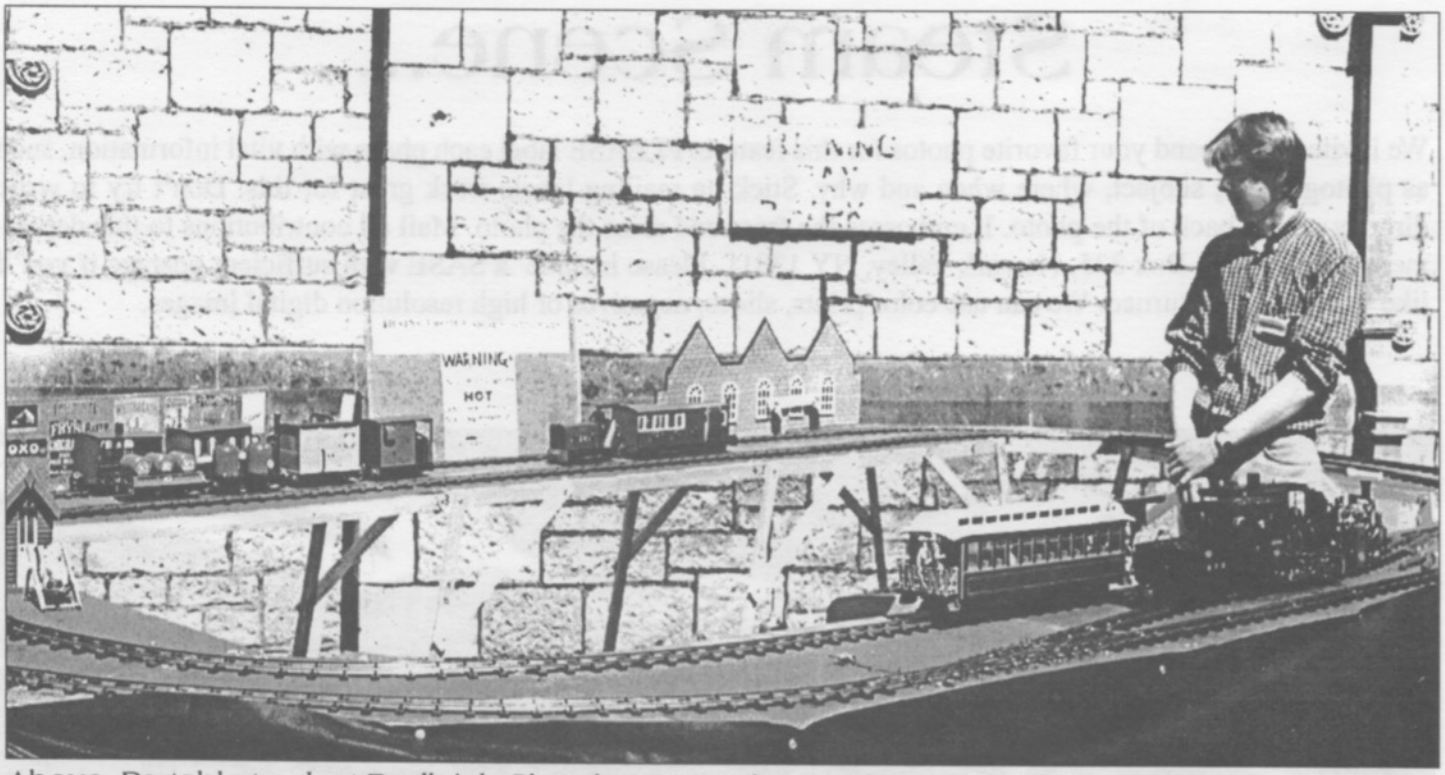
We invite you to send your favorite photos for this feature. PLEASE label each photo with vital information, such as photographer, subject, where when and why. Stick-on mailing labels work great for this. Don't try to write directly on the back of the photo. It embosses the front and ruins the photo. Mail all contributions to this department to: SitG, PO Box 335, Newark Valley, NY 13811. Please include a SASE with sufficient postage if you'd like your photos returned. We can use color prints, slides, negatives or high resolution digital images.



Above: Robert Boudeville's kitbashed, Americanized Roundhouse Lady Anne. Robert credits Don Beach's article in *SitG (issues #29-31)* with the inspiration for this loco project.

photo by Robert Boudeville

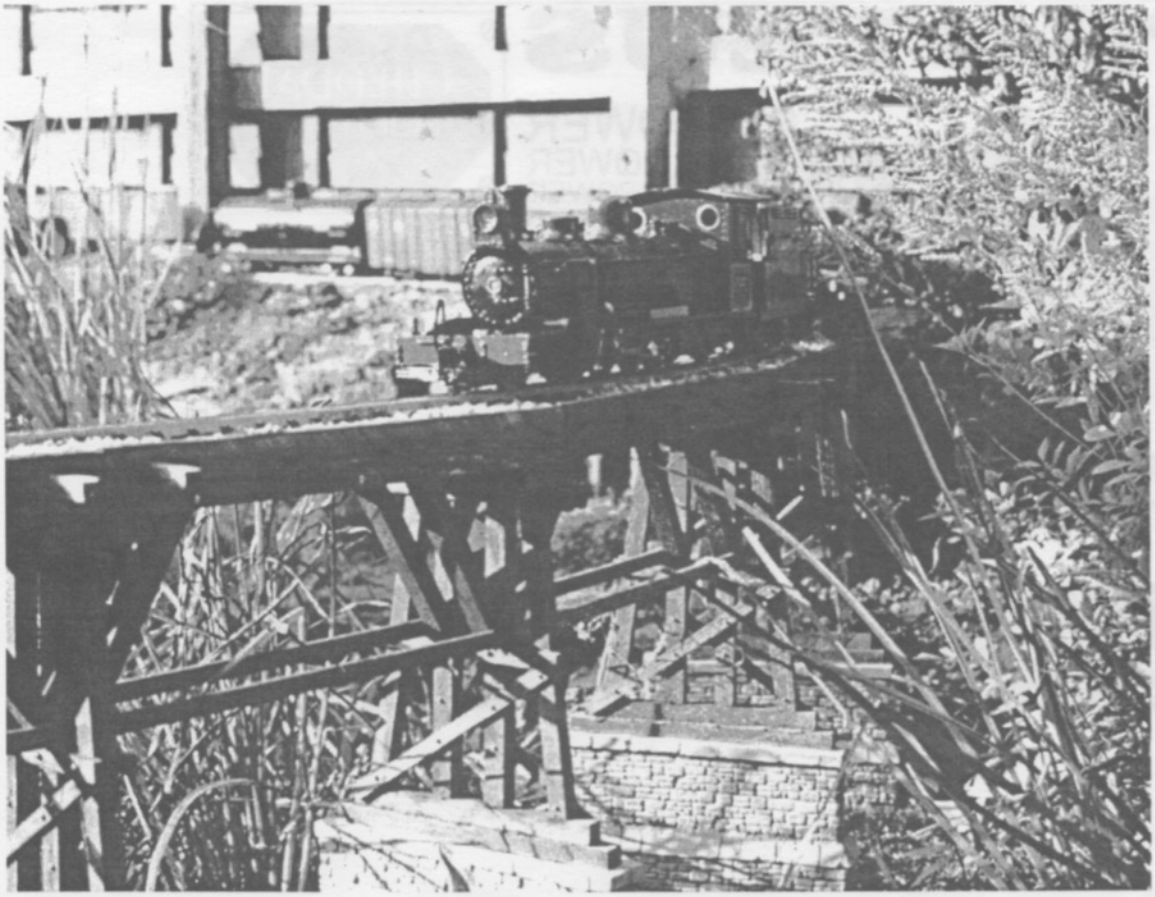
Left: Werner Jeggli proudly displays his scratchbuilt condensing steamer. The loco is called LOK2001, and this photo was taken at Clark Lord's line in Nevada.



Above: Portable track at Budleigh Church Fayre, July '99. Chris Weightman (seen in photo) wth Jim Slater's ICI train (powered by a converted Mamod) at rear, and Jim's Peter Angus-built geared loco SAMPSON at the front.

Below: Another view of the portable track at Budleigh, England. Chris Weightman once again with Jim Slater's Peter Angus-built geared loco SAMPSON in charge of the ICI train.

Both photos by Jim Slater



Left: David Mercer's № 20 on a goods train crossing Bolan Bridge. № 20 is a gas fired Barsi "F" 2-8-2 built by John Campbell.
photo by David Mercer

Below: Finescale Hunslet Port Class drifts downgrade with a goods train on John Wenlock's railway in 1995. Sorry to report that this railway has since been lifted.
photo by John Wenlock

Steam Powered Airboat

text and photos by Raymond F. HasBrouck

All it lacks is a gator or two...

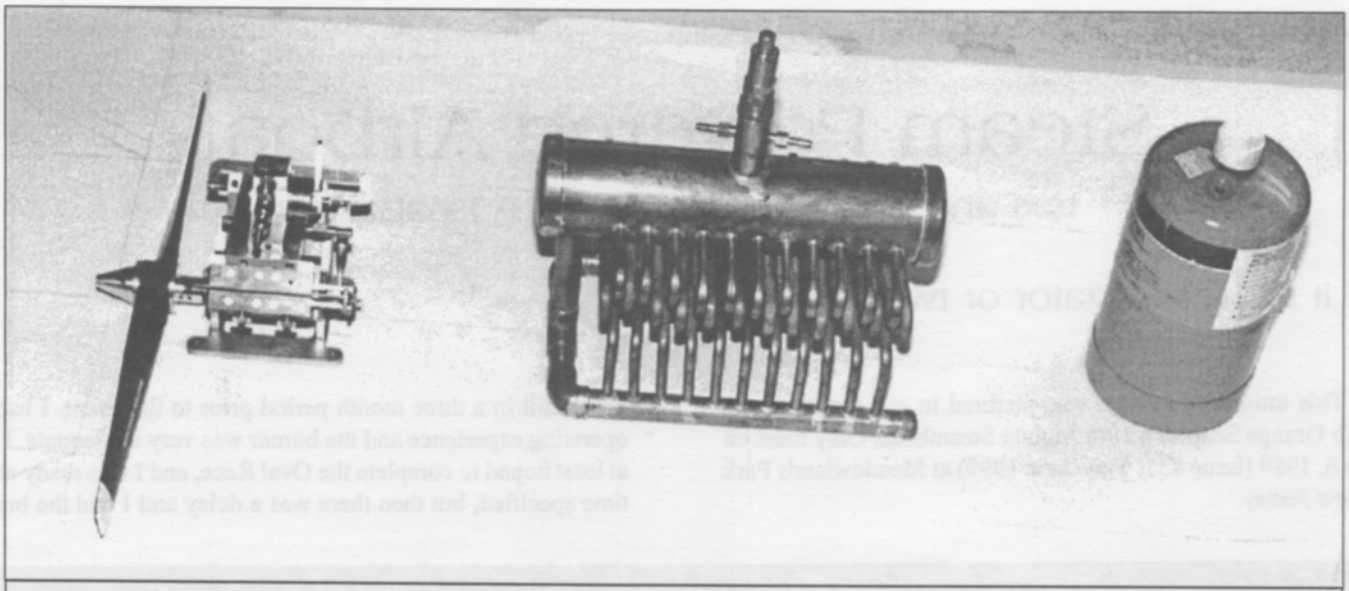
This unique steamboat was pictured in our report on the South Orange Seaport's 10th Annual Steamboats Only meet on June 6, 1999 (issue #51, May/June 1999) at Meadowlands Park in New Jersey.

Author's completed steam powered airboat. Airboats can run on water, snow...or wet grass!

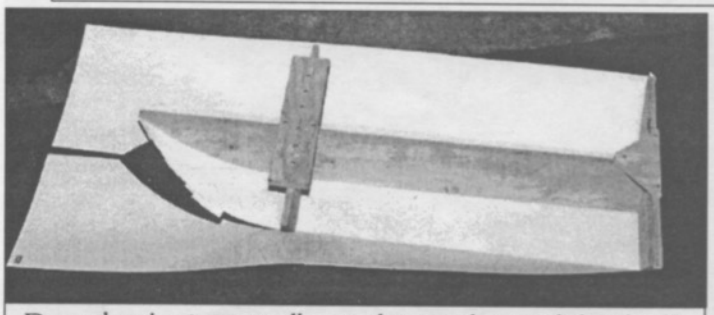
When I talked to Mr. HasBrouck about an article and photos so our readers could be as fascinated with his design and workmanship as I was, he sent us this article with the following statement...

"I was rather disappointed with the boat at the South Orange Steamboats Only meet. The boat was just finished, having been built in a three month period prior to the event. I had no operating experience and the burner was very inadequate. I had at least hoped to complete the Oval Race, and I was ready at the time specified, but then there was a delay and I had the burner turned way down so it would not pop off. Dumb me... when we started I pushed the boat off without turning up the fire! I was lucky to retrieve it without using the rescue boat.

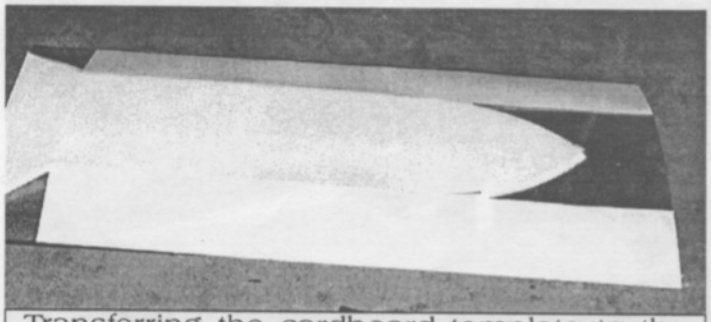
"In your nice write up you very graciously said it was '...not a great performer.' This was the understatement of the day! Now, with the burner modified to get some more air, I am quite happy



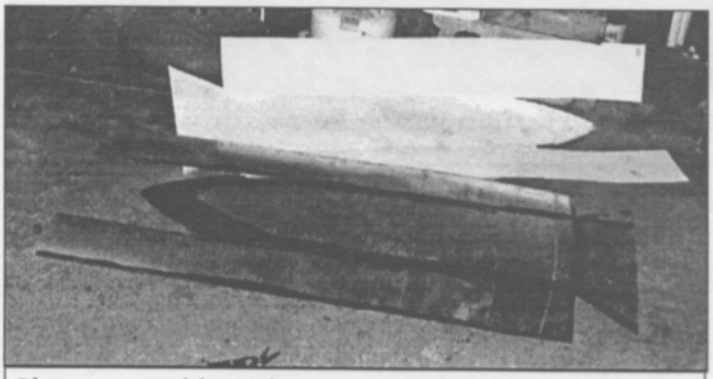
In the beginning....the V-4 engine and the Roberts type boiler.



Developing a cardboard template of the hull.

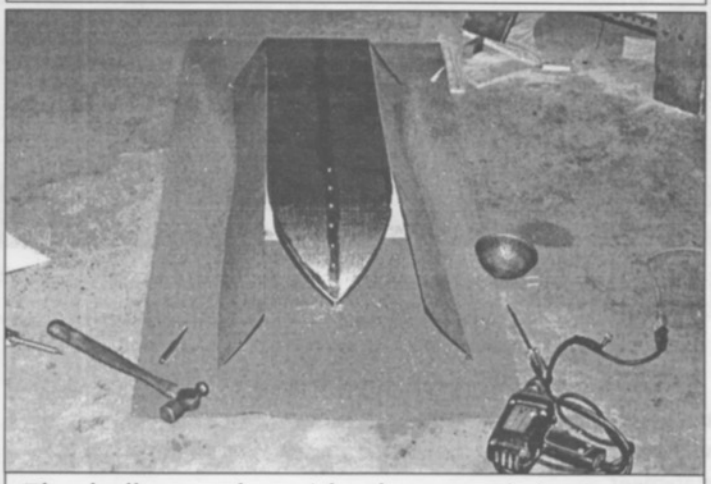


Transferring the cardboard template to the sheet metal.

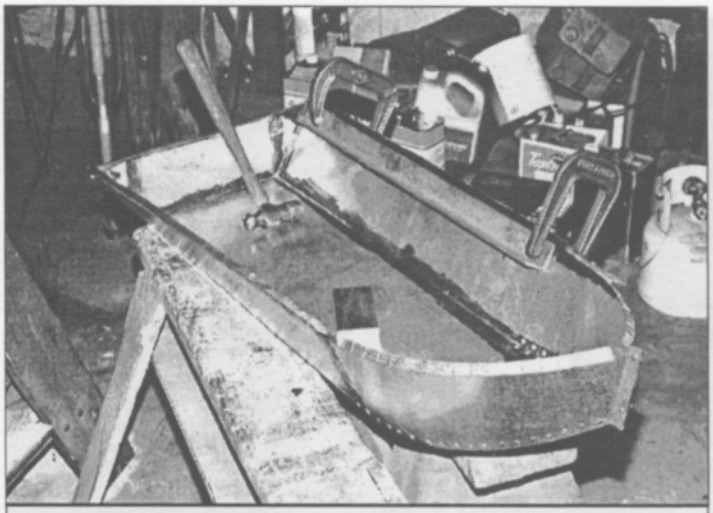


Sheet metal bandsawed to shape of template.

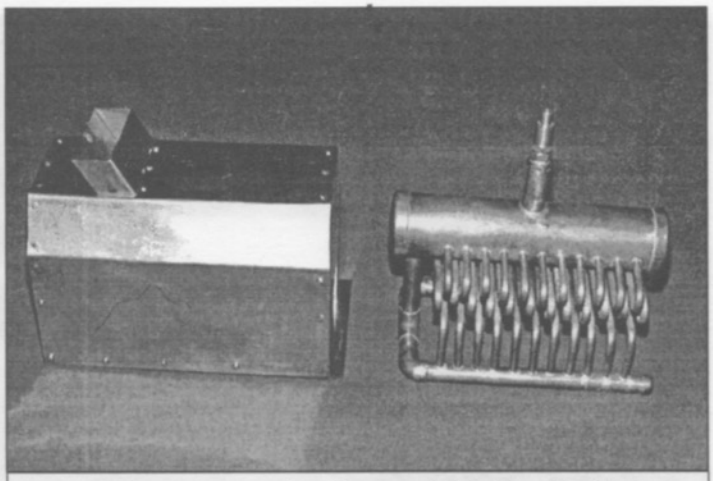
Both sides are formed up, the wood form is clamped in place and the tabs for riveting will be formed up next.



The hull turned upside down and the bottom screwed fast to the wooden former. Holes will later be plugged with rivets.



Most of the bottom riveting is complete, and clamps are in place to form the port gunwale.



Roberts type boiler and boiler shell.

with the performance."

As you can see, I enjoy the challenge of building all components - engine, boiler, burner, hull, etc.

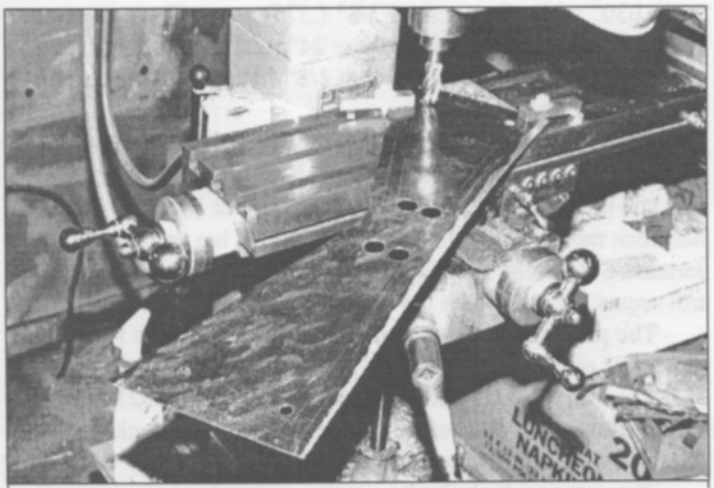
The engine is a V-4 single acting type. The cylinders are cast iron and the pistons are aluminum with two cast iron rings on each piston. The bore is 5/8" (.625) and the stroke is 1/2" (.500). A spool (piston) valve is in each cylinder head. Because of the 90° configuration, only one eccentric is required. Reversing is by switching the inlet and exhaust ports with a rotary valve. A single channel with the rotary valve controls direction and speed (reverse is usually not found on airboats, but this one has it).

The drive from the engine to the propeller is by toothed timing belt. The arbor for mounting the propeller has two ball bearings with a 1/4" (.250) dia. shaft. Some testing was done to determine the best ratio between engine speed and propeller. The final choice was with the propeller turning 1.7 times engine speed.

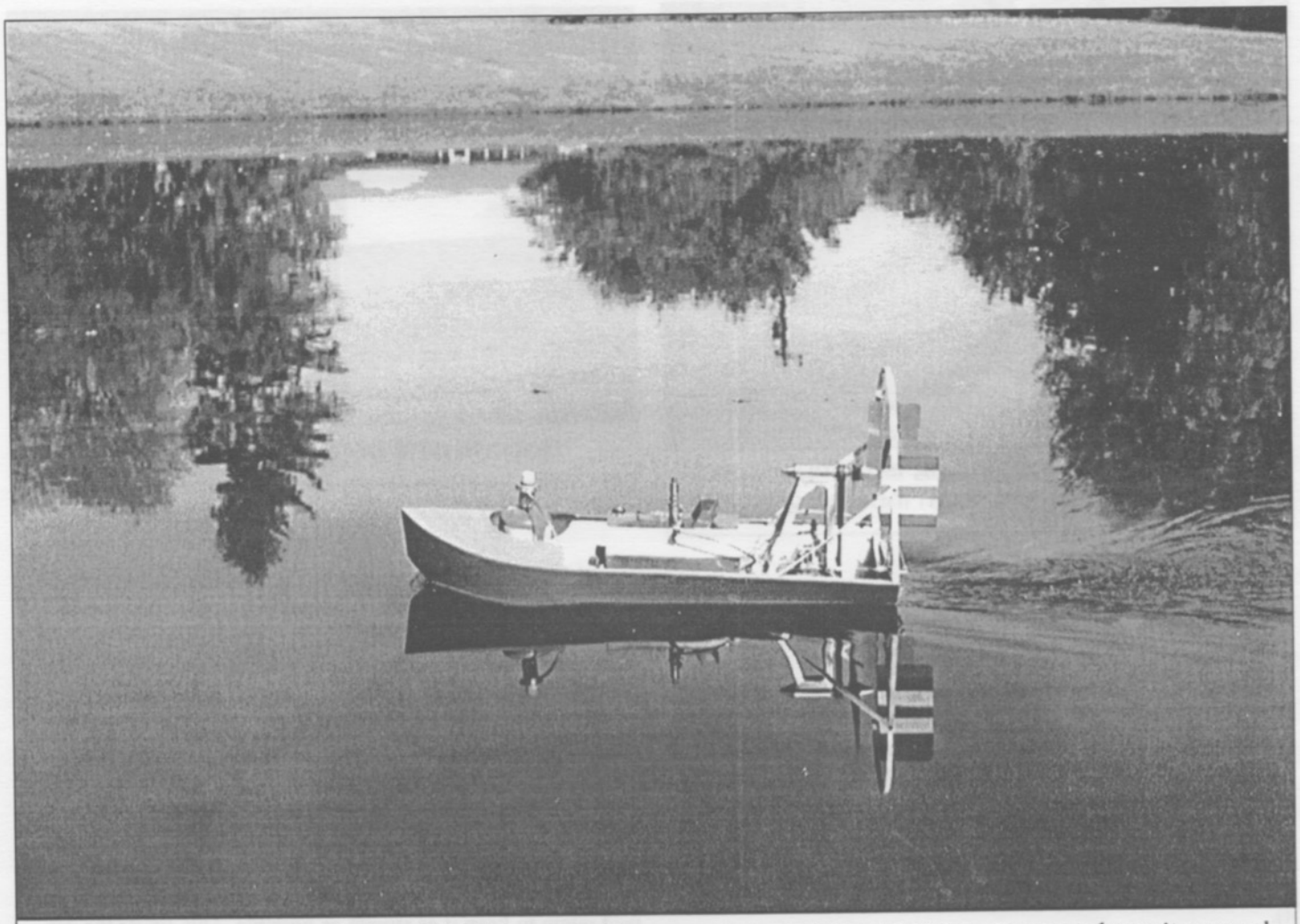
The boiler is of the "Roberts Type" with 1/4" (.250) dia. tubes. The top drum is 2" copper. All boiler parts are standard hardware plumbing components. The boiler holds one pint of water with a little volume left for steam. The heating surface is 200 square inches (1.6 square ft.) All joints were silver soldered using Easy Flow 45™. The hydro-test on the boiler was 200 psi. The safety valve is on the top of the filler plug and there is no feed pump to keep it as simple as possible. This limits the run time to about 8 minutes.

The burner is a propane type of 3/4" (.750) dia. brass tube

Boiler casing under construction; outer shell is made of stainless steel. Thin metal inner shell with 1/8" insulation between shells.



Fabricating the sheet metal which will become the support for the propeller mounting.



The Author enjoys the fruits of his labors as his completed airboat skims across a favorite pond.

with .030" wide slots spaced 3/8" (.375) apart. There are two loops of superheater coils of about 24" total length. The boiler outer casing is stainless steel with 1/8" (.125) insulation and a thin tin liner on the inside.

When first run at the South Orange Steamboats Only meet, the burner could not provide enough heat. Boiler pressure was low and the propeller speed was 1400 RPM or less. The burner has been modified to admit more air, which has improved performance. Propeller speed is now 1800 RPM and the rudder control seems adequate with the increase in speed.

The propeller is a standard plastic model airplane type 15" dia. by 8" pitch.

The hull is of riveted galvanized sheet metal .023" thick, made from a single piece except for the small area decked over near the bow, which required a separate piece.

The propane tank, boiler, engine and radio servos are all mounted on an aluminum plate .093" thick. This whole assembly can be removed from the hull by removing just four screws.

Aluminum rivets were used in the hull, with the rivet heads on the inside. The holes on the outside were given a slight countersink for the rivets to expand into.

Outside finishing was done by grinding the rivets flush. Auto body filler "CUZ" was used to smooth rough spots. The outside was painted with a spray can and the inside left bare metal. The overall length is 37". The beam at the bow is 10". The sides flare out making the beam at the stern 15". The depth of the hull is 5". The weight, with fuel and water, ready to steam is 25 pounds.

We wish all our friends, subscribers, advertisers and everyone else in the steam community a very safe, warm and blessed

Holiday Season

and a very

Happy New Year

Thanks to all for your support and your friendship over the years!

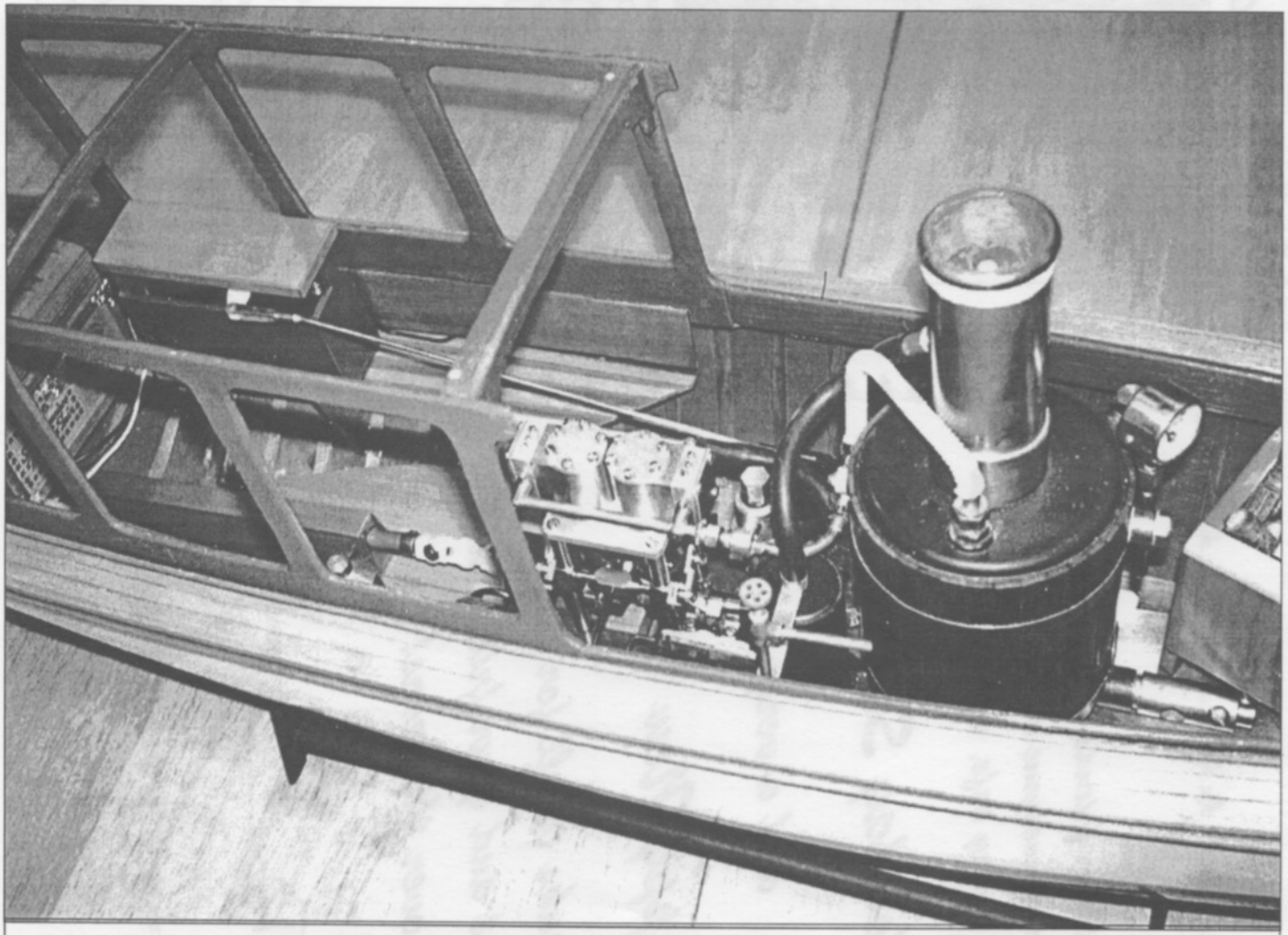
Ron & Marie

Steam on the Pond.....

We invite you to send your favorite photos for this feature. PLEASE label each photo with vital information like photographer, subject, where, when and why. Stick-on mailing labels work great for this. Don't try to write directly on the back of the photo...it embosses the front and ruins the photo. Send your photos to SitG, PO Box 335, Newark Valley NY 13811. Please include a SASE with sufficient postage if you'd like your photos returned.

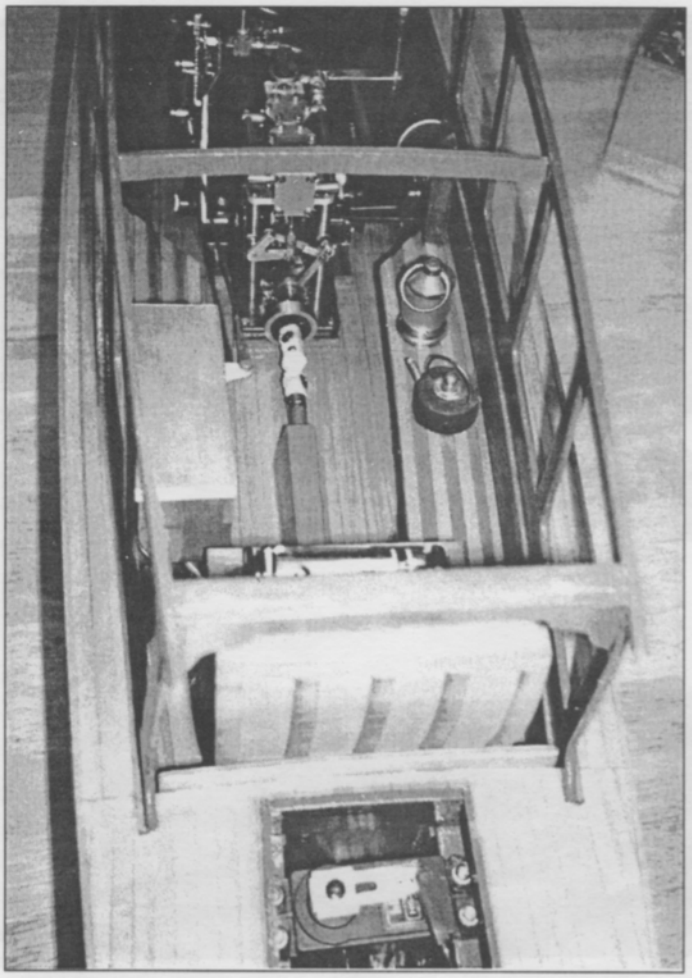
Mort Schoenberg sent in this month's photos. This beautiful steam launch started as a Krick Patricia kit, which was built by the late Vince Alessi of the New Jersey Live Steamers. It originally had a Wilesco engine and soft soldered boiler, which Mort replaced with a Graham Industries twin cylinder, slide valve engine and a Cheddar Models Pippit boiler.

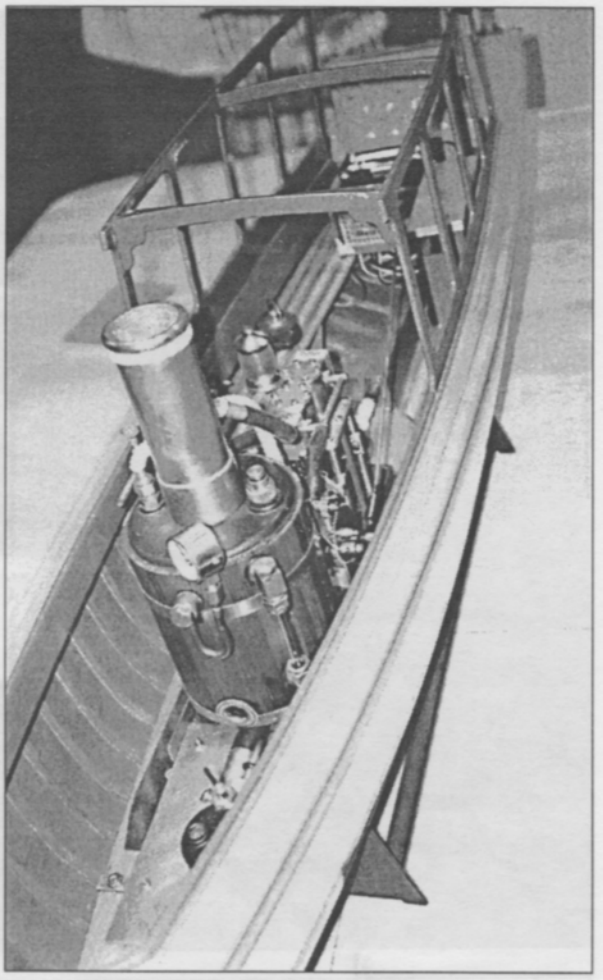
The boat is 36" long, is gas fired and is fitted with radio control and 3 servos - one for steering, one for throttle and the third for reverse quadrant operation.



A closeup of the very clean and neat engine and boiler installation. Note the interesting hookup for reverse quadrant operation, utilizing a Delrin™ u-joint, on the left.

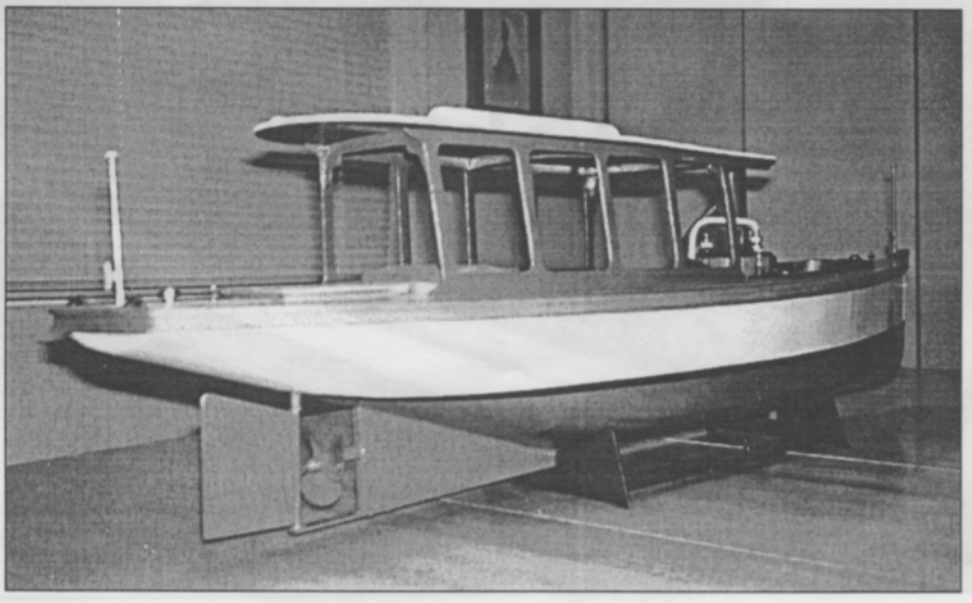
all photos by Morton R. Schoenberg



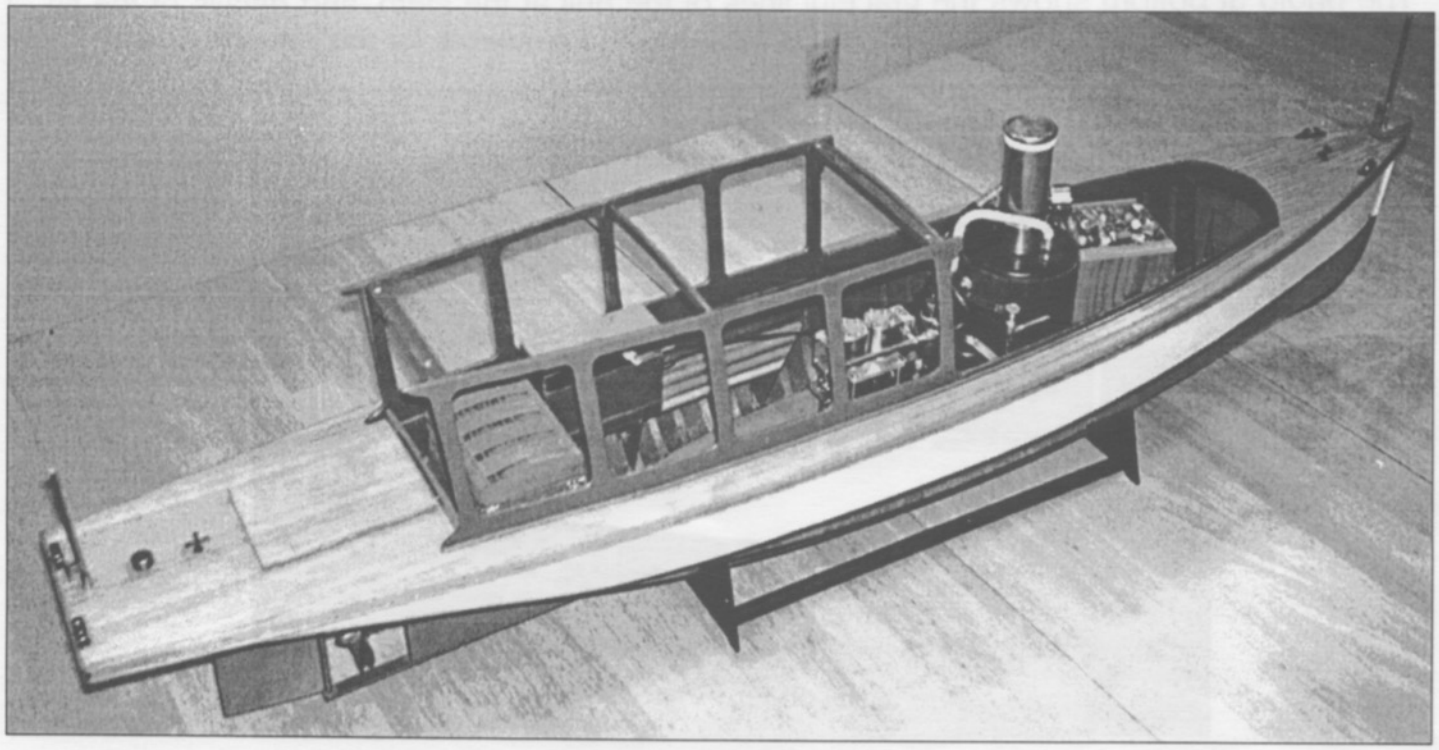


The two photos at the top of this page offer a good look at the interior of the Patricia. Check out the scale sized lantern and teapot on the table in the photo above left!

The photo at bottom shows the graceful lines of the hull at the stern, and details of the fin, propellor and rudder. Also clearly visible is the support framework for the canopy.



This view of the hull (above) really shows off the classic setback location of the cabin, so typical of Victorian era steam launches. The overview with canopy removed (below) gives a good idea of the layout of the decking and powerplant installation.



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The German tug boat "Alte Liebe" can now be launched again in 1:25 scale using the Puffin steam plant. Over 450 metal fittings, laser cut superstructure and deck, detailed GRP hull, full size plans and instruction manual included. L 40", B 10¼" Price $385.00

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CHEDDAR PELICAN HORIZONTAL/VERTICAL

This Pelican boiler as well as all other Cheddar model boilers are contructed totally of copper and silver soldered. They have been pressure tested and come with certificate. The Pelican features Vee Twin oscillating cylinders. A touch of elegance from a by-gone age.
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A comparable plant to the Pelican but in an in-line twin format. Great for open launches as well as enclosed environments.
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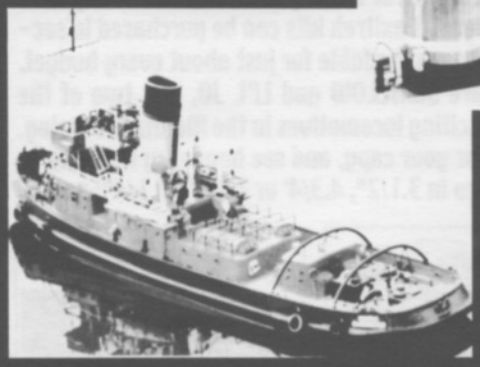

IMARA

A twin screw harbour berthing tug. It is impossible to describe in every feature detail in a model featuring over 1,400 parts. All there is to say is that this kit is the modeling enthusiasts most detailed scale model ship ever offered.
Scale: 1:32, L 43½", B 11½"
IMARA KIT $515.00

PEGASUS VEE 4 DELUXE

A superbly balanced powerful Vee 4 with a 3 drum water tube boiler and piezo ignition. This engine is capable of handling the most demanding of situations.
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Marie Felling

This superbly detailed crown colony harbour tug is sure to be an eye-catcher at the pond. Single or twin screw available. Fiberglass hull construction is idealy suited for a number of Cheddar steam plants. Scale: 1:32, L 43½", B 11½".
MARIE FELLING KIT $515.00

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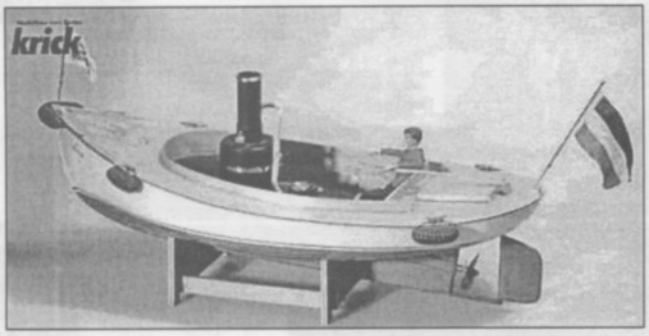
We are an agent for Cheddar Models Ltd., purveyors of the finest in marine steam plants. Cheddar steam engines and boilers are available in factory built or kit form. Check the review of Cheddar's PIPPIT marine steam plant in this issue, and then call us to order your Cheddar catalog *today!*

• Krick Boats

You'll need a boat for that new Cheddar steam plant, and Krick features a wide range of boat kits...there's something for every taste and skill level. The Krick ANNA, shown below, is broad-beamed and stable, even in rough waters.



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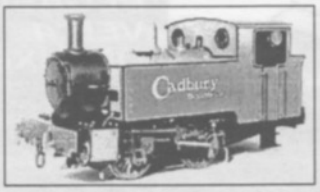

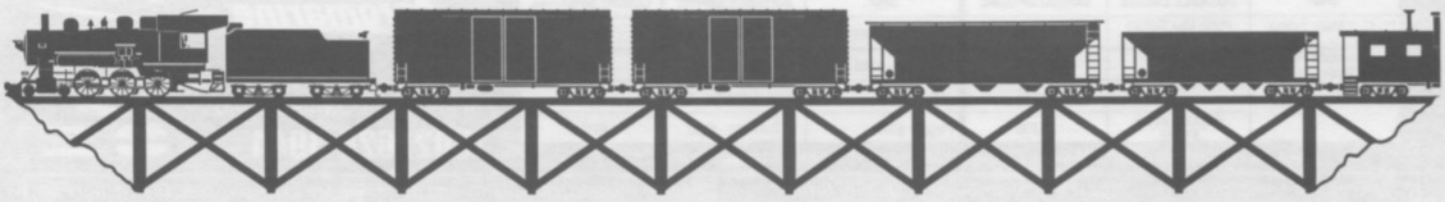

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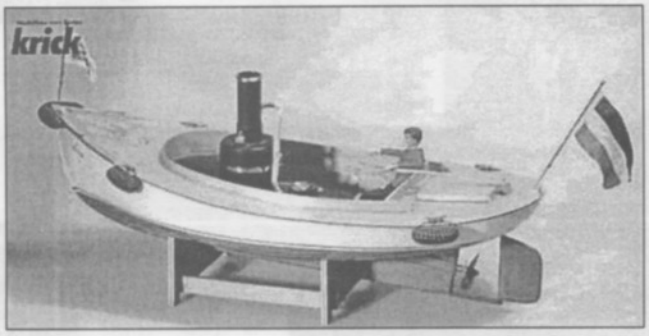

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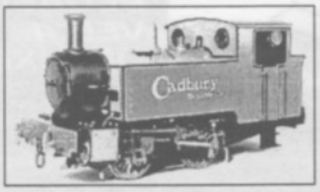
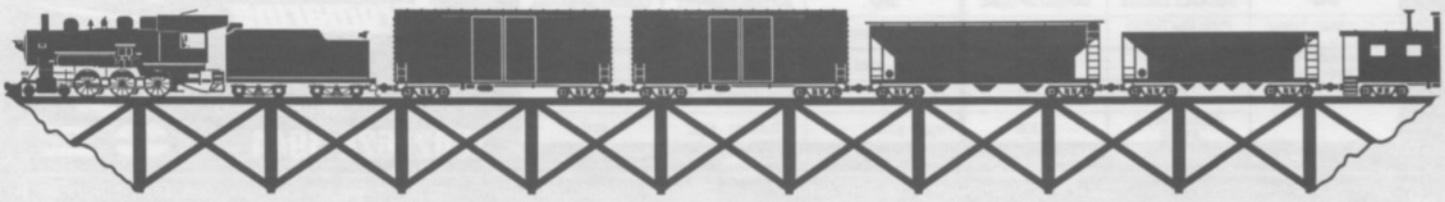
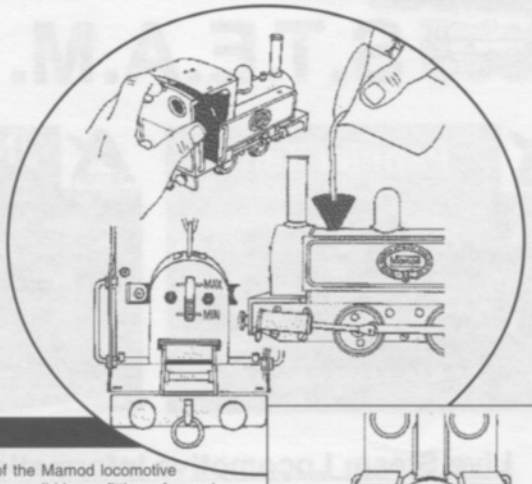


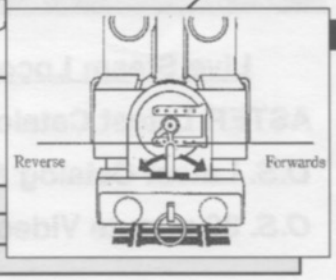


Mamod LIVE STEAM LOCOMOTIVES



1402 MAMOD STEAM LOCOMOTIVE KIT SLK1

This kit is available in either '0' or 1 gauge. An excellent introduction to the garden railway. The design of the Mamod locomotive models is based on an old side-tank locomotive. All metal and heavily built throughout, these models feature: solid brass fittings; forward or reverse through variable speed control; twin double-acting cylinders which provide smooth power transmission; combined safety valve and filler cap; a whistle which is operable from inside the cab; brass buffers; rear panel of cab removable for access to burner and sight glass. Dimensions: Length: 8"; Width: 3.5"; Height: 4.75"; Weight: 2 lbs., 2 oz. Each model is supplied with steam oil, burner tray, filler funnel and one box of fuel. Complete assembly instructions are included with kit.



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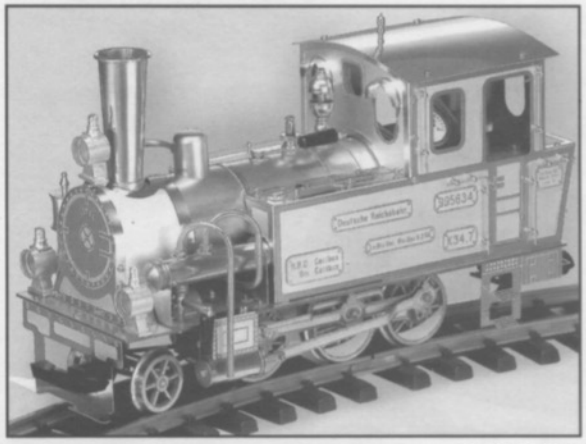
Affordable Easy-to-Build Live Steam Locomotive

Yesteryear Toys & Books Inc. has been appointed the exclusive North American distributor for the WILESCO LUCAS steam locomotive (45 mm - GAUGE G. The Spreewald model is a replica of the tank locomotive built in 1917 by the Jung Co. for the Pulkau Narrow Gauge Railway Company in Germany.
It arrived in 1944 at the "Spreewaldbahn" at Cottbus and received the name loco 09-27. With the "Spreewald" the history of the steam railway came to life again. Like the great prototypes the model loco "Spreewald" is really driven by steam, complete with boiler, steam cylinder valves. When the small "Spreewald" is in steam, you will be delighted with its power and authentic steam sound. Both from the engine and typical steam whistle.



The model "Spreewald" is supplied in kit-form. All necessary parts are in the assembly-box. Detailed building instructions lead graphically over the individual production steps. After the complete assembly the model stands in front of you and waiting for the first trip. For the assembly - exclusively screwing work - approximately 20 hours are required. Necessary soldering works are already completed. The boiler is governed by the safety standards and is inspected in our house.
The model is produced exclusively of rust proof materials. The wheels of the model "Spreewald" are manufactured of zinc casting according to the original drawings. "Spreewald" is gas-fired and can be filled with commercial lighter-gas. After you have placed the machine on the rails, the burner can be lit by a match or a lighter at the smokestack. The running period lasts approximately 20 minutes without interruption. In case of stop-and-go operation the running period extends accordingly.
The steam loco "Spreewald" can be assembled so you can operate the steam model remote-controlled easily. The steam model can be operated by you to run forward or backward, more quickly or more slowly or to stop.
An optional steam pressure-regulating valve prolongs the durability. The regulating valve controls the gas flame by the gas pressure. As soon as the pressure in the boiler increases the valve shifts down the gas supply. When the boiler pressure decreases the valve opens automatically. This regulation guarantees an exact supply of required gas volume. So the running time of the loco will be increased and energy-and water consumption will be reduced.

LUCAS TANK LOCOMOTIVE SPREEWALD SPECIFICATIONS:

Length: 320mm (12 1/2") Width: 109 mm (4 1/4") Height: 165 mm (6 1/2") Weight: 2.25 kg (5 lbs.) Track Wheel Dia.: 39.9mm (11/2") Rim Diameter: 43.7 mm (13/4")
Stroke: 14 mm (1/2") Cylinder Bore:10 mm (5/8") Gauge: 45mm (45mm) Scale 1:22.5 Pressure (approx.): 1.5 bars (21 PSI) Boiler Volume: 238 cm^3 (8 oz.)
Double-acting cylinders Boiler made of 1 mm stainless steel

☐ LUCAS SPREEWALD LOCOMOTIVE KIT	$1195.95	☐ D-001	OPTIONAL GAS-PRESSURE REGULATING VALVE	$179.95

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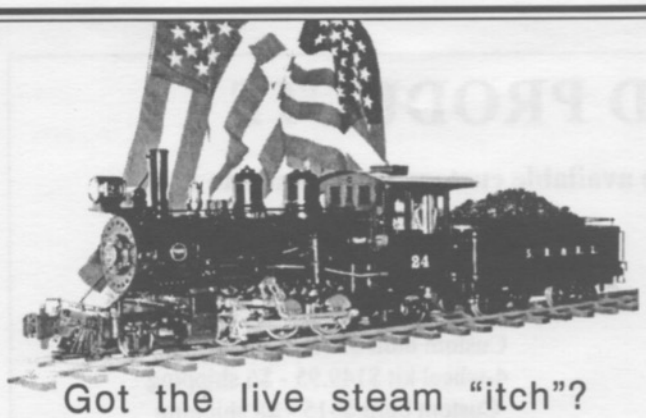

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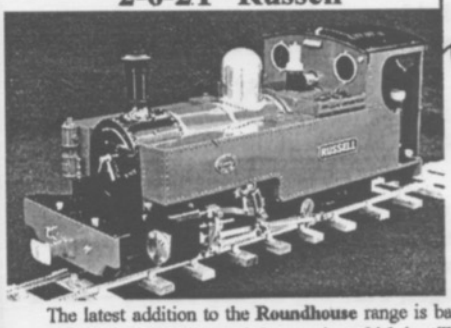
ROUNDHOUSE

Living Steam Railways
for SM32/SM45 & 'G' scale

2-6-2T 'Russell'

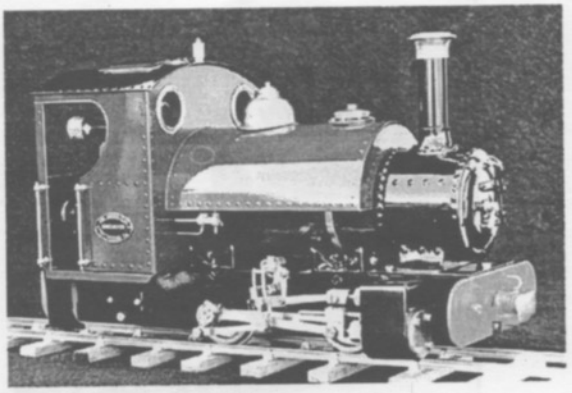
NEW



The latest addition to the **Roundhouse** range is based on the well known Hunslet 2-6-2 tank locomotive which is still in operation on the Welsh Highland Railway today.

0-4-0 ST 'Katie'

A typical narrow gauge saddle tank locomotive which draws inspiration and features from a number of famous builders like Hunslet, Bagnall and Pecket etc.



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SWAP SHOP

WANTED: Steam tractor or Showman's engine in 1" or 1-1/2" scale. Maxwell Hemmens, Coles, Reeves, Maxitrak, etc. Allan Starry, 1615 9th. Ave. N., Edmonds, WA, 98020. (425) 672-3056 or ARStarry@aol.com. (51)

For Sale: Circle of Micro Engeering code 332 six foot eight inch radius track - $175.00. For info call Robb DeVries (616) 667-1260 or E-mail robbandcheryl@usxchange.net. (51)

For Sale: Pearse 0-4-0 Switcher with R/C. Only run 6 times - like new. $2250.00. Contact Donald Boone at 757-925-1402. Call any time. (51)

For Sale: Well, my radii are too small and therefore some engines are not being used. Thus I offer for sale: (1) Aster Stirling Single. Gauge 1. Kit built, runs great on air but raises steam in 0.2 nano-seconds as at least one wick tube needs to be capped off or the axle pump never has a chance to kick in. $3100 if I get around to working on the burner or $2850 if not. (2) HB engineering [Harold Denyar] GER 2-4-2 tank engine. Gauge 1. Run twice at Diamond-head and once on a treadmill. $2450.00. (3) HB engineering [Harold Denyar] Lady of the Lake. Gauge 1. Run once. $2950.00. (4) Maxwell Hemmens Ogwen. Gauge 1. New, never run. Thought I'd bash it but never got around to it. $1750.00. Contact Chip Rosenblum, 111 North Roosevelt, Columbus OH 43209 - (614) 235-7732 - e-mail: DOCFLAME@worldnet.att.net (51)

Wanted: I need a few back issues to complete my set of *Steam in the Garden.* I need numbers 1 through 14, also 43, 44 & 45. I have EXTRAS of the following numbers to trade (preferably) or sell: numbers 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37 & 38. Call Rik Beeson at 831-429-1145 or e-mail rik@armory.com. (51)

For Sale: Roundhouse ARGYL, green, new, in the box, radio control, never been fired. $1475.00. Mike O'Rourke, 510.849.9284. (52)

For Sale: (1) Pearse COLORADO - excellent runner, matte black w/silver smokebox, radio control, headlight & cab light. In perfect condition. Oil changed regularly, garaged, ALWAYS water over the crown sheet. $2200 plus shipping. (2) Solid Oak Transport/Display Carrier - suitable for K-4's, Daylight's, and other large 1:32, 1:24, 1:20 engines. Red velvet interior and brass hardware. The case measures 41" length x 7 1/2" wide x 7 1/2 " high (inside measurements. Outside measures 43" x 8-1/2" x 11" high. $200. Bill Chamberlain, phone (407) 884-9325 or e-mail: wilsteam@aol.com. (52)

For Sale: Aster K4. Complete and fired once. A beautiful model. $4200 or best offer..Aster Nord. Complete and unfired. A four cylinder compound with awesome detail. $4500 or best offer. Call Sam DiMaggio at 608-277-0486 or email me at sdimaggi@us.oracle.com. (52)

Wanted: Hyde-Out Mountain live steam Shay. Stumpy Stone at mrstumpy@1st.net or 740/633-6354 evenings until 9pm est. (52)

Swap Shop listings are offered at no charge as space permits. No dealers and no phone-in ads, please! Send your listings to SitG, P0 Box 335, Newark Valley NY 13811, or fax to* 303-975-6211*(24 hours), or e-mail to <rbrown5@stny.rr.com>. Ads must contain sellers name, plus address and/or phone number. Ads will be run one time only unless previous arrangements are made.

End of the Line

What's It Going To Be? It's Your Call...

The holiday season is upon us, followed by a brand new year in which to enjoy steaming and other delights. Now is a good time to start planning your steamup calendar for the year 2000, whether you subscribe to the "New Millennium" theory or the "Last of the Old Millennium" theory. Either way, we might as well extract maximum enjoyment out of our allotted days, rather than sitting around playing couch potato!

You might want to start with a New Year's Day steamup. I know that several will be held around this country, and probably around the world as well.

Then there's Diamondhead 2000 - the focus of live steamers all over the globe will converge on this tiny village in Mississippi in mid-January, and if you aren't there you'll miss out on the best our hobby has to offer.

Those of us in the Frozen North will have to sit on our hands for much of the winter, but I'll bet those of you in warmer climes will take advantage of your great winter conditions!

In May the National Spring Steamup in California will be doing its bit to ensure the happiness and well being of the global steaming community as this fine event enters its 4th year.

By now we'll be into good steaming weather for even the most northern climes, and regional and area steamups will be popping up like marigolds in the garden. Legendary steamups come to mind at venues like the Pennsylvania Live Steamers in PA, Jim Hadden in Utah, Charlie Lix in Nevada, several locations in the Houston area, Jim & Jo Anne Stapleton in Virginia, Larry Smith in Florida, Chip & Gail Rosenblum in Ohio and many more. We'll be hosting 3 steamups again on our PETS track next summer, and we'll once again offer a choice of steam on rails or steam on water, thanks to the generosity of our good neighbor across the road and his beautiful pond.

Is it time for you to spruce up your track - or build one if you haven't already done so? If your place is small, then you could host an invitational steamup so that the crowd won't overwhelm the available space.

Let's not leave the steamboaters out of this! The South Orange bunch in New Jersey puts on a great event in June, which FA and I are looking forward to attending again next year. The Pennsylvania steamboaters also have a pond and a schedule of events, and we hope to make it down there this year.

And what will you be doing as another year rolls by? Making memories and some new friends, I hope!

And then take a little time to share the experience with your kindred spirits through the pages of SitG.

Happy Holidays & Happy Steaming!

Ron

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George Lyon (PA) looks on as Steve Siegel (PA) admires George's lineup of 32mm (gauge 0) steam locos - a Roundhouse Fowler and two Wrightscale Baldwins. The occasion is a steamup at Ron & Marie Brown's home in upstate NY during the summer of '99.

digital photo by Ron Brown