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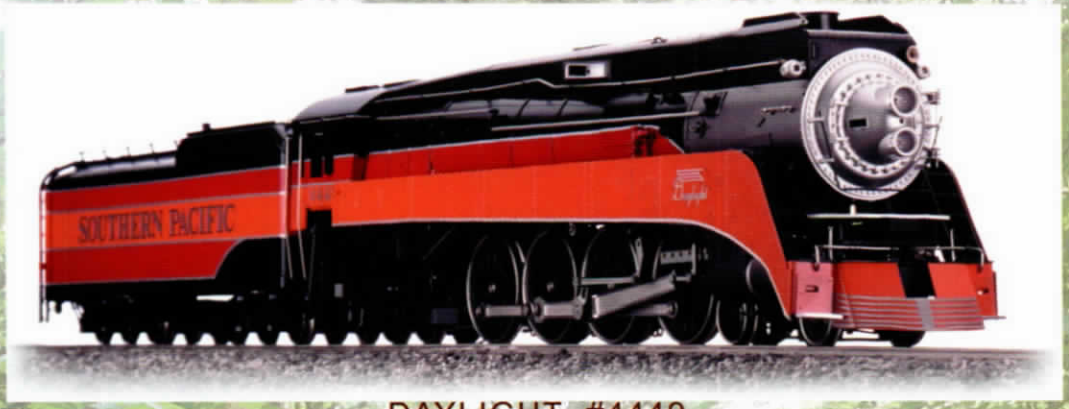

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STEAM IN THE GARDEN

Vol. 15, Nº 4
Issue Nº 82

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

Articles

Departments

FRONT COVER:

A C-16 wheezes up to the water tank on the Rivendell & Midland. The loco was scratchbuilt as described in the article in this issue beginning on page 7.

photo by Les Knoll

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CALENDAR OF EVENTS

September 2-4, 2005 - Pennsylvania Live Steamers Labor Day Weekend Steamup. Rte. 29, 1 mile north of Rte. 113, Rahns, PA. Permanent Gauge 1 track and Gauge 0/Gauge 1 portable tracks in operation. Night running with lights. Food available on site with lodging nearby. For information and directions contact Harry Quirk, PO Box 215, Springtown PA 18081 - phone 610-346-8073, or e-mail mikemoore@comcast.net.

September 10-11, 2005 - 2nd Annual Cincinnati Small Scale Steamup. For more information...www.gcgrs.org/steamup ● 513-385-6599.

September 24-25, 2005 - Marty Cozads steamup in Nebraska City, Nebraska. (see the report on this event in 2004 in SitG Nº 80) Marty would like to know for sure ahead of time if you are coming, so please RSVP. A noon meal will be provided. For more information, or to RSVP, e-mail: cozy6z@yahoo.com ● phone: 402-873-9284

October 15, 2005 – Southern Steam Up hosted by Southern Steam Trains, Travelers Rest, SC, with special guests: Ron Brown, Editor, Steam in the Garden Magazine, presenting an "Introduction to Gauge 1 Live Steam"; and Hans Huwyler, Aster Hobby USA, reviewing the development and assembly of Aster's NKP Berkshire. For more information contact, Jim Pitts, 864.834.3954

October 22-23, 2005 - Men, Metal and Machines, Visalia Convention Center, Visalia, California. Bob Starr has offered to bring his live steam track to this super event so we can have a Small Scale Live Steam presence at the show. We need Locos and drivers! I brought my steamboats last year and showed them off. You pay your admission ($7.00), which is for both days, and if you want to exhibit there are tables available to do so. Exhibitors are eligible for a special prize drawing. I am planning to have several tables outside the layout so the locos can be displayed and viewed easily. Setup will take place Friday night and teardown Sunday afternoon. If you can help it will be appreciated. The show venue is a modern hotel and convention center complex in downtown Visalia. Contact me for hotel information or any questions. Call 818-681-5473 (cell) or email me at steveciambrone@yahoo.com or steve.ciambrone@L-3com.com

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

WHAT'S NEW?

Timesaver Layouts of Australia has produced a DVD on Building Your Own Stub Turnouts. This DVD is a combined effort of Geoff Horne and Stuart Thompson of Newcastle, Australia and follows the construction of a set of Stub turnouts from the cutting of the timber for the ties, to the finished turnout. All tools required are fully described as are the techniques used to make construction an easy task, even for the beginner. The turnout shown in this DVD is currently in use on the group's exhibition layout and it has performed without any problems right from the start. This DVD runs for 34 minutes, and after viewing our copy we recommend it as a very useful addition to the reference library of Garden Railway modelers that want that 'Hands On' approach to their modeling. This DVD will play on all machines from ALL regions. The cost is AUD$25 plus an additional AUD$10 for Air Mail shipping to the USA.

Available direct from: Timesaver Layouts, 29 Kenley Crescent, Macquarie Hills, NSW, Australia 2285 e-mail to: geofhorn@bigpond.net.au

* * * * * *

Geoff Horne, Stuart Thompson and their hardy band of steamers down under have produced a video on DVD titled *Garden Railways In The Hunter*. We just had an opportunity to view this chronicle and it is well done. The photography is clear and sharp, and we recommend it to all who enjoy seeing small scale steam in action. Many different locomotives, including scratchbuilt models, can be seen running on the Hunter Valley group's track. There are even some familiar faces to those of us who attend the Diamondhead steamup here in the USA. It was interesting to see Gordon Watson (Argyle Loco Works) and Paul Trevaskis (Rishon Locomotives) enjoying the hobby in their natural habitat.

Here is Geoff Horne's description of the DVD... Recently our small group of Garden Railway enthusiasts decided to run a weekend in Newcastle Australia for people interested in this facet of the hobby of model trains. Although this first show was small, the range of equipment either running or on static display was quite amazing. The running time of this DVD is a little over 40 minutes and gives a glimpse of the great time that we all had. There is little or no commentary so that you can just enjoy the trains.

At only AUD $15 plus postage of AUD$5 Aud for air mail to the USA, you probably will think that this is too cheap, but our idea was to share our enjoyment of the weekend and maybe make a few dollars to put into the next show.

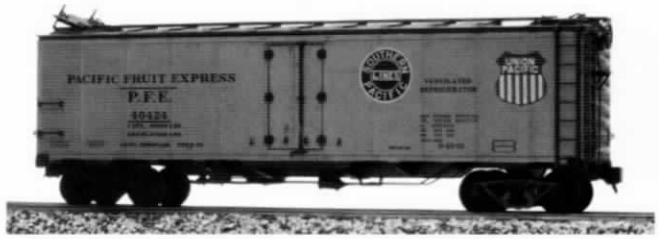
Available from: GRITH, 29 Kenley Crescent, Macquarie Hills, NSW, Australia 2285 email: geofhorn@bigpond.net.au

* * * * * *

AMS (American Model Supply) is proud to announce the production of the PFE Reefer R-40-10 in 1:32 scale and 45mm gauge. These fine scale cars are constructed with plastic and brass castings. Metal wheels, knuckle couplers, working doors, and working ice hatches are just some of the details featured on these models.

TECHNICAL SPECIFICATIONS

Scale/Gauge - 1:32 scale/45mm gauge
Weight - 0.9 Kg (2 lbs)
Length - 398 mm (16 1/4")
Width - 95 mm (3 3/4")
Height - 130 mm (5 1/8")
Minimum radius - 1.2 M (48")



Mike Moore wrote a comprehensive review of the first of these cars in SitG #77. Now AMS has added all these road names and car numbers to this line of beautiful PFE Reefers.

AM32-501 - Refrigerator Car, PFE Data Only 6 car set - AM32-502 - Refrigerator Car, PFE Double Herald 6 car set (#41501, #41402, #41303, #41204, #41105, #41006) - AM32-503 - Refrigerator Car, PFE Double Herald 6 car set (#41661, #41652, #41643, #41634, #41625, #41616) - AM32-506 - Refrigerator Car, PFE Single Herald 6 car set (#40101, #40123, #40223, #40321, #40424, #40225) - AM32-507 - Southern Pacific PFE Reefer Car " Dry Ice," set of 6 cars (#99041, #99042, #99043, #99044, #99049, #99052) - AM32-508 - Southern Pacific PFE Reefer Car "Ice Service," set of 6 cars (#73821, #73823, #73825, #74802, #74820, #74822) - AM32-509 - Northern Pacific Reefer, set of 6 cars

Our samples reflected Accucraft's (AMS) usual high standard of quality. Details and lettering are all crisp and sharp. These cars will look great behind any American 1:32 (gauge one) steamer from the Golden Age of steam. We are looking forward to pulling small cuts of them with our Accucraft SP Switcher when it arrives!

A Scratchbuilt Consolidation 'From the Ground Up'

by Les Knoll

In issue #51 of *Steam in the Garden* there was an article describing how I took a Pearse Nevada 2-6-0 and converted it into a 2-8-0 Consolidation. Although the locomotive frame, tender, some linkages and smaller parts were scratchbuilt, the locomotive basically retained the Pearse piston valve mechanism, but with eight drivers instead of six.

During this initial rebuild, the piston valves were replaced as is often done with this type of valve mechanism after a number of years of running. This locomotive ran well for several years, but on the Rivendell & Midland Railroad locomotives are run long and often. It became necessary to replace the piston valves and valve blocks for a second time. I wanted a more permanent solution to the valve replacement associated with piston valves.

A REAL C-16, sporting Walschaerts valve gear, on display in Colorado.

My 2-4-4-2 'Little River' logging Mallet has been running along just fine now for about five years with only minimum maintenance. It is powered by four Roundhouse "D" valve cylinders. With "D" valve construction, the valves wear in, not wear out. This construction is by far the most reliable I have ever seen. I wanted the same reliability for my Consolidation. The answer was to build a new 2-8-0 around Roundhouse cylinders and valve gear. The new locomotive would be built around the Pearse boiler from the previous Consolidation, and re-use parts such as the pilot assembly and pilot trucks.

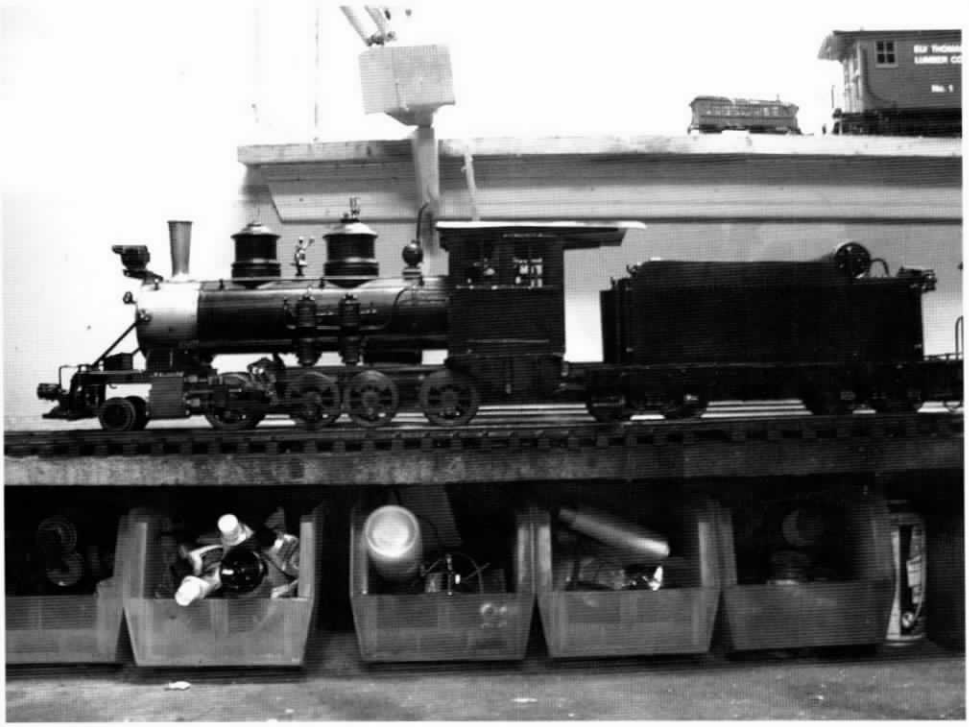
As with all my locomotive building projects, the first step was to make CAD conceptual layouts of what needed to be done and what the final product will look like. Starting 'from the ground up' meant there were many other cosmetic options now open that were not available on the last Consolidation project. New detail parts had also become available from several sources. After studying a number of photos, drawings, and models of C-16's and C-19's, it appeared that a smaller cab, mounted higher on the chassis, and much larger steam and sand domes would make the locomotive look more like a credible C-16 . Armed with scale drawings of C-19 Denver and Rio Grande Western #346 (which I was lucky enough to ride in steam at Colorado Railroad Museum) and a complete CAD file of the original Consolidation rebuild, a better proportioned C-16 type locomotive could now be designed. Exact scale dimensions of #346's cab was not the concern, only correct proportions. Once the properly proportioned cab is in a CAD file, it can be sized up or down to fit the locomotive layout with its proportions remaining intact.

Those who have read the articles on the Shay 'From the Ground Up' (SitG #65 through #68) know that the Rivendell & Midland Railroad equipment is closer to 1:22.5 than 1:20.3 due to early-in-the-game

purchases of locomotives and rolling stock. The most important factor is that everything fit in with everything else. To that end, proportion can play a more important role than scale. In the hierarchy of things, the 2-4-4-2 must appear as the largest locomotive, the 2-8-0 next, and the Shay smaller than either of them. All must look in proper proportion pulling the collection of 'Big Hauler' cars owned by the railroad. The steam streetcar/interurban was built using a 'Big Hauler' combine and will automatically fit in.

One of the main concerns in perceived size of the Consolidation is cab height. No matter what the scale, the cab height of this 2-8-0 must be the same or less than the 2-4-4-2, and taller than the Shay. This is paramount in establishing relative locomotive size.

The properly proportioned cab, based on #346, was added into a CAD drawing of the existing Pearse boiler. The cab mounting is about 1/2" further back on the boiler than it was on the original Consolidation, which allows for more component space in the cab as well as making the boiler appear longer.



The author's completed scratchbuilt Consolidation.

A lower works was laid out using the chassis built for my original Consolidation conversion as a starting point. Since (except for the boiler) this was a completely new locomotive, I could now change nearly all the things I wanted to change from the previous Consolidation project. A set of eight larger diameter drivers, the same size as used on the 2-4-4-2, were ordered from Walsall of England. The two center sets were machined flangeless or 'blind' as on many of the C-16 prototypes. The driver spacing was set so that the centerline of the rearmost driver axle is in line with the front edge of the cab. To my eye, this is a visual cue on the proportion of the locomotive, just like boiler size, driver size, cab size, and dome size. The higher drivers looked good on the CAD drawings, and were even more impressive on the actual model. The frame is longer than on my previous Consolidation, and the cab sits higher. This makes for a pleasing C-16 proportion.

Accucraft steam and sand domes, as used on their C-16 #278 (part #'s AP11205 and AP11205) can be ordered as parts. These parts and other revisions were put on the CAD drawing of the boiler, along with the proposed lower works and the scratchbuilt D & RGW tender from the previous rebuild. The result: The locomotive was instantly recognizable as at least a generic C-16 type, even though it was not an exact scale model of any particular prototype. The drawings did point out the need for a longer tender which would be better proportioned to the longer locomotive.

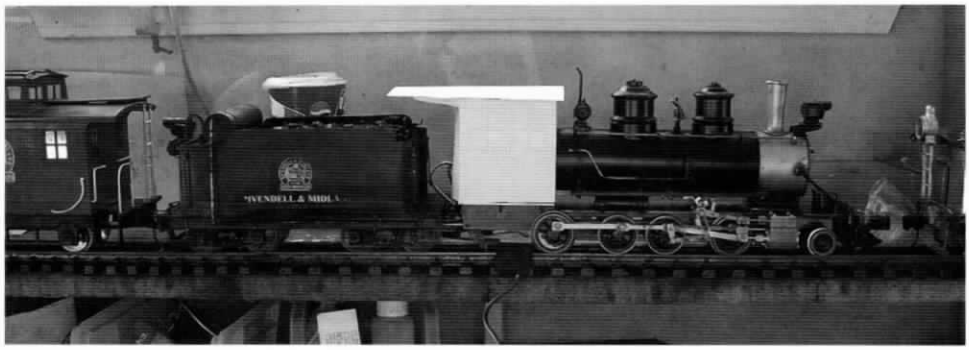
The new domes were fitted to the existing boiler along with other additional details. At this time a much needed sight glass was added to the boiler as well as a valve for a hot water feed for the tender mounted gas bath.

Using Roundhouse components, the only major deviation made from usual practice for locomotives of the time is the use of outside frame Walschaerts valve gear. This does give the mechanism a slightly different appearance. It helps hide the fact that the Pearse boiler must be mounted unusually high off the chassis due to the tall smokebox support permanently attached to the boiler assembly. An interesting note on loco proportions here: If the boiler had been lowered somewhat and the cab height remained the same, the increased height of cab roof over boiler tended to give the locomotive a 'plantation' look...not what I was looking for. The cab height must remain at 6 1/4" off the rail so this

locomotive does not appear smaller than its working mates, the Shay and 2-4-4-2.

This locomotive is driven off the second axle as was done on Denver and Rio Grande Western Consolidations such as #278 and #346. Consequently the valve gear is quite compressed, just as it is on the Little River 2-4-4-2, which utilizes the same mechanisms. This geometry makes for extremely short return rods.

As the saying goes, especially in modeling narrow gauge, there is a prototype for everything. There was at least one prototype of a locomotive of this style and vintage using Walschaerts valve gear. The Colorado and Southern acquired a Brooks Consolidation originally built in 1898 as #30 for the Colorado and Northwestern and converted it from Stephenson's to Walschaerts valve gear in 1926. This was done because of operational and wear difficulties. How history repeats itself–sometimes in miniature.

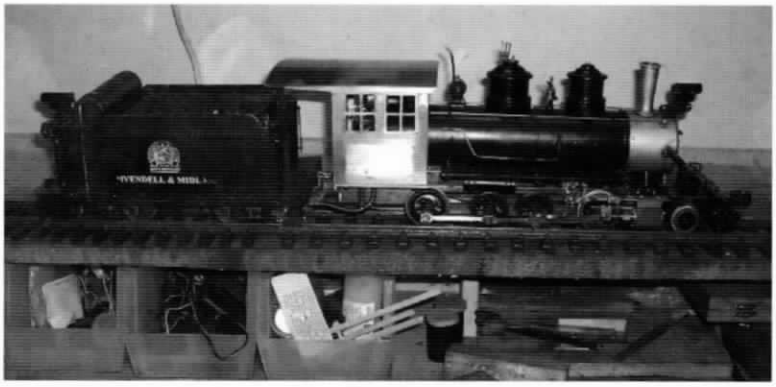


The author's Consolidation with a cardboard mockup of the cab in place to check proportions.

The locomotive had been renumbered C & S #74. Pictures and drawings in the January/February 1995 Narrow Gauge Gazette show this narrow gauge Consolidation, beartrap stack and all, sporting Walschaerts valve gear. This loco has been restored and is on display in Boulder, Colorado, lettered for its original owner, the Colorado and Northwestern. The beartrap stack is long gone but the Walschaerts valve gear remains to this day. If the C & S did it, in theory the Denver and Rio Grande Western could have done it too. If they had, the result might well have looked quite a bit like my Consolidation.

Roundhouse cylinders and valve gear are configured for a nominal stroke of 5/8" (.625"), but can accept cranks yielding a stroke of 17mm (.669"). This was undoubtedly done to accommodate British modelers working to metric sizes. This longer crank throw properly requires longer return cranks, or the valve stroke will be reduced. These were made from brass following the design of the Roundhouse originals. The return cranks are not pinned as Roundhouse suggests because the locomotive is disassembled from time to time. With a system using height gauges for obtaining the 90 degree relationship between main and return cranks, they can be accurately reset in a matter of minutes.

The basic construction of the inside frame chassis follows the techniques first outlined in the article in *Steam in the Garden* #49 on inside frame conversion of Roundhouse mechanisms. The valve gear is mounted based on Roundhouse supplied dimensions with the exception that the relationship between driven axle and expansion link is substantially shortened, making the return rods much shorter. The curved weight shaft supplied with the valve gear has been replaced with a much shorter straight shaft to accommodate the narrower inside frame spacing, and the valve gear reversing lever mechanism has been moved to the right side as is American practice. The cranks are also right side leading as we do in the good old USA.



The complete (but unpainted) cab has been fitted to the chassis.

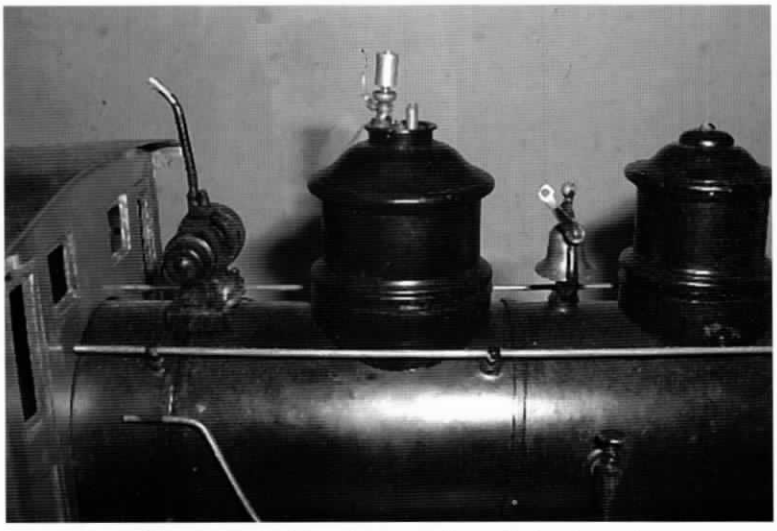
The chassis was constructed in the standard way with 1/16" steel flats for sides and 1/4" brass spacers. These spacers are attached with 4-40 socket head cap screws. The chassis contains drivers, axle, bearings, boiler mounts, cab mounts, pilot deck and pilot, cylinders, valve gear, and generally every locomotive component attaches to it.

The drivers, side rods, cylinders, and valve gear were assembled to the basic frame. At first the smaller diameter drivers from the Pearse conversion were used as 'stand ins' until the larger diameter drivers arrived from Walsall. When the specially made return cranks

and rods were fitted (the smaller diameter Pearse drivers also had cranks for 17mm stroke), the chassis was plumbed and air tested. This is done one cylinder at a time. With the drivers acting as flywheels, each cylinder should run well enough on its own that it can run as an independent 'engine' with the chassis being supported so the drivers run free.

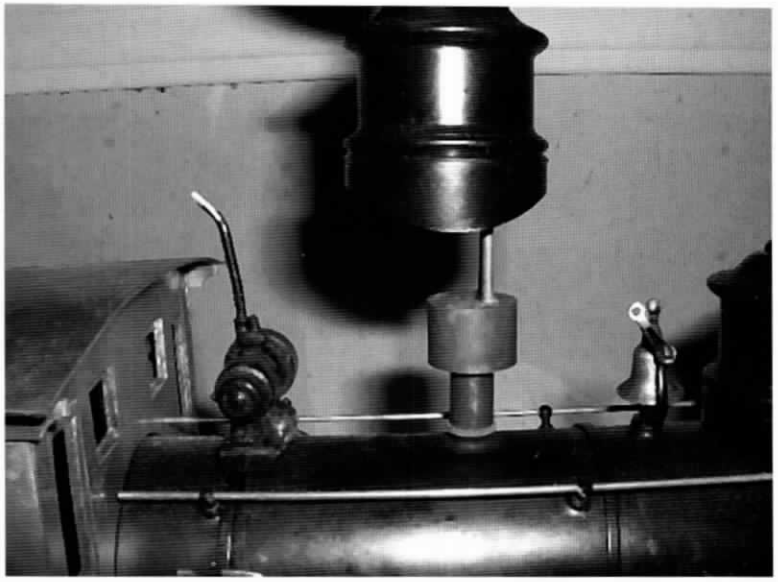
Following Roundhouse's timing instructions, the return crank was set using height gauges, and the "D" valve was centered. With no break in and with normal lubrication, the right side came to life on less than 20 PSI and ran perfectly the first time. The chassis could actually run on the track with one cylinder only. The left side followed suit with just a little adjustment required. The completed chassis ran so smoothly that it could run by 'lung power'.

The next stage of the construction was the mounting of the cab floor, pilot assembly, and boiler. With these in place, the plumbing and radio control could be laid out and installed, and the exact mounting environment for the cab determined. Several paper mockups for the cab were made based on the conceptual CAD layout of the locomotive. These were tried on the actual locomotive chassis for fit and appearance. Like the Shay that has been the subject of previous articles, the main goal was a pleasing proportion and appearance as opposed to prototype accuracy. When the actual locomotive said "C-16" to me, the appearance was right.



Dome seated in place and ready to steam!

The locomotive itself was set aside for a while, and attention turned to the tender. The tender scratch-built for the original Mogul-to-Consolidation project appeared too short for this larger Consolidation. Following the same basic proportions of the original, a new, longer, tender shell and chassis was built, and detail parts, steaming components and trucks from the previous tender incorporated.



The dome has been lifted to show the safety valve.

The new tender had different operating requirements from its predecessor. With a two–servo R/C system required for Walschaerts valve gear, cab space is at a premium. The fuel tank was located in the tender as on the 2-4-4-2. A new tank was fabricated and a gas bath added .The bath is similar to my Shay design in that the hot water for the gas bath is fed from the bottom of the boiler. The bath tank has overflow protection and a drain activated from the inside of the tender. After this locomotive was completed, this same feature was added to the 2-4-4-2 tender. When new developments are made for one locomotive, the others on the Rivendell & Midland get updated as well.

When the internals of the tender were functional, it was time to take the much anticipated test run. The first was under air, on the workbench. The Goodall valve was replaced with an adapter to a flexible air line, and the locomotive was run with R/C on reversing gear only. The throttle was controlled by hand.

The locomotive was smooth and responsive on air. The initial steaming had the same result. The locomotive wasn't much to look at with no cab and only a chassis for a tender, but it sure did run nice.

Following a series of paper mockups, an all brass cab was made. Installation of the remaining tender features including full radio control followed shortly. The

Cab followed the same construction as the 2-4-4-2 and Shay. It has all four sides with reliefs for windows and doors. This one is more elaborate in that the front and rear cab doors are three panels deep for windows and door panels, and the rear cab windows actually slide. The roof hinges fully forward for access to gauges and controls. Counting the four–pane side windows, there are a total of 22 panes on the cab.

The tender internals had to be rearranged before the shell was put on. It contains many more components than the tender for the previous Consolidation. Another case of 10 pounds of goodies in a 5 pound bag, like on the Shay. Good thing I made it longer!

The gas valve is disguised as the right side feedwater valve as on the Little River 2-4-4-2. With the tender shell on its chassis, this machine started to look like a locomotive. A quick spray coat of black paint was put on the cab to see what the painted locomotive would look like. From a distance it looked completed... if you ignored the lack of footboards and air pumps.

One thing to mention to all those that scratchbuild using Roundhouse cylinders. Until the piston seals wear in, you will not get peak power from the cylinders. Roundhouse runs in their completed locomotives and chassis about 8-12 hours on air and steam. They consider running in on steam to be the best. This is something all scratchbuilders should do, too. The piston seals on the 2-4-4-2 were replaced about the same time as the steam test of the new 2-8-0 chassis. Both suffered from reduced pulling power. After about 12 hours on the track under steam for each loco, their original pulling power was restored. The seals were now run in just as they would have been at the Roundhouse factory. Run in is the perfect excuse for increased track time. After a period of run in for benefit of seals, etc. the locomotive made its 48 axle qualifying run and, finished or not, was now in revenue service.

Although proper proportion in a scratchbuilt locomotive such as this is extremely important, detail parts 'make' the locomotive. Added components such as Accucraft domes, all the Trackside Details parts on the tender, the Hartford 'Rio Grande' style tender trucks, Trackside Details number plate, large generator, headlight and backing light, and those to-die-for Trackside Details large sized cross compound air pumps all add to the C-16 image.

The larger air pumps dictated a new, different type of walkboard construction from the previous Consolidation. On the previous loco, the walkboards were supported by brackets soldered to the boiler bands, a method used by Pearse on my original 'Nevada'. These brackets came loose and fell off fairly often. The new walkboards mount to the cab at the rear and to a bracket behind the smokebox on the front. This is a more sturdy arrangement, borrowed from the design of the 2-4-4-2. The Pearse 'Nevada' boiler has a great looking smokebox, stack and smokebox front, and the pilot that was on the original 'Nevada' is simply perfect for this locomotive. These components complete the image.

Additional evaluation runs had the locomotive doing facing and trailing point switching, and running point to point with turning and switching operations. It is such a good runner, it is most often used for visitor demonstrations. In a recent review of the new Roundhouse Darjeeling "B" Class locomotive, the basic operating description was that it "Runs like a Roundhouse". With their reputation for solid, reliable runners, that is enough said. Happily that applies to locomotives built with their components, too.

The goal is to have my entire locomotive roster to that point of reliability. This 2-8-0 and its big brother, the Little River style 2-4-4-2, are basically powered with Roundhouse running gear. The scratchbuilt Shay is powered by a Chaney Mark II Shay engine, and the steam streetcar uses Mike Chaney oscillating cylinders designed as replacements for the Jane. My modest roster of four steamers is all powered by the 'Best of the Brits', and any one of them can now be pulled off the shelf and have a good run.

The locomotive has been run in temperatures as low as 25 degrees and has performed quite well. This is probably due in part to the water bath for the fuel that is boiler fed. It is a good puller and a fine runner, and I expect that it will be for years to come.

Workshop Project

The Resonator Whistle - Part 8
A funnel mounted two-chime whistle

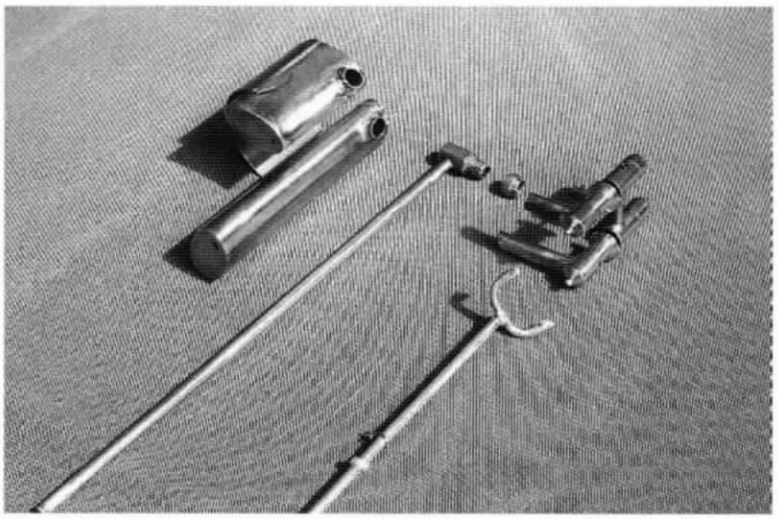
by Larry Bangham

Great sound for steamboats

The prototype whistle for this design was made for Rick Richardson of Pleasantville, NY for his 1/32 scale tug boat now under construction.

Boat steam whistles are beautiful and quite distinct from locomotive whistles, as they generally have longer bells and often display multiple chimes mounted side by side. They are usually prominently displayed high on the funnel, this being the most commanding and functional location.

Keeping things warm is one of the secrets of good whistle performance. To capture the heat, the resonators and steam supply line for this whistle are located inside the funnel. This particular funnel is 1-1/2" thin wall brass drain tube, which provides adequate area for both the exhaust and whistle components.



Bits & pieces ready for assembly.

The two resonators and steam supply require three accurately located holes in the funnel. Trying to simultaneously insert three fixed tubes into three close fitting receptacles requires either precision tooling or, that the receptacles are free to float. In this case the interface has been designed to allow some float, but to ensure a good fit without resorting to grossly oversize holes and big washers to cover them up. A sequence of operations can provide matching alignment as the work progresses.

Recommended fabrication sequence

1. Complete the whistle assembly.
2. Complete the resonators except leave nipples at least 3/8" long.
3. Complete the resonator support assembly using the whistle to position the resonators.
4. Complete the steam line
5. Drill funnel holes to match whistle

Whistle Assembly Figure 1

The whistle is an assembly of two right angle whistles joined by a manifold. The right angle whistle was featured in SitG issue #70. There you will find the detail drawings and instructions for assembly. Semi finished parts or completed assemblies are also available.

The aperture bodies are finished to different lengths to simulate the bells for the high and low tones. Care must be taken when joining the whistles to keep the steam inlets and resonator tubes parallel.

The whistle harmony can be altered for tuning by shortening the resonator tubes. This raises the pitch. Lowering the pitch slightly can be achieved by increasing the aperture gap. The design musical interval

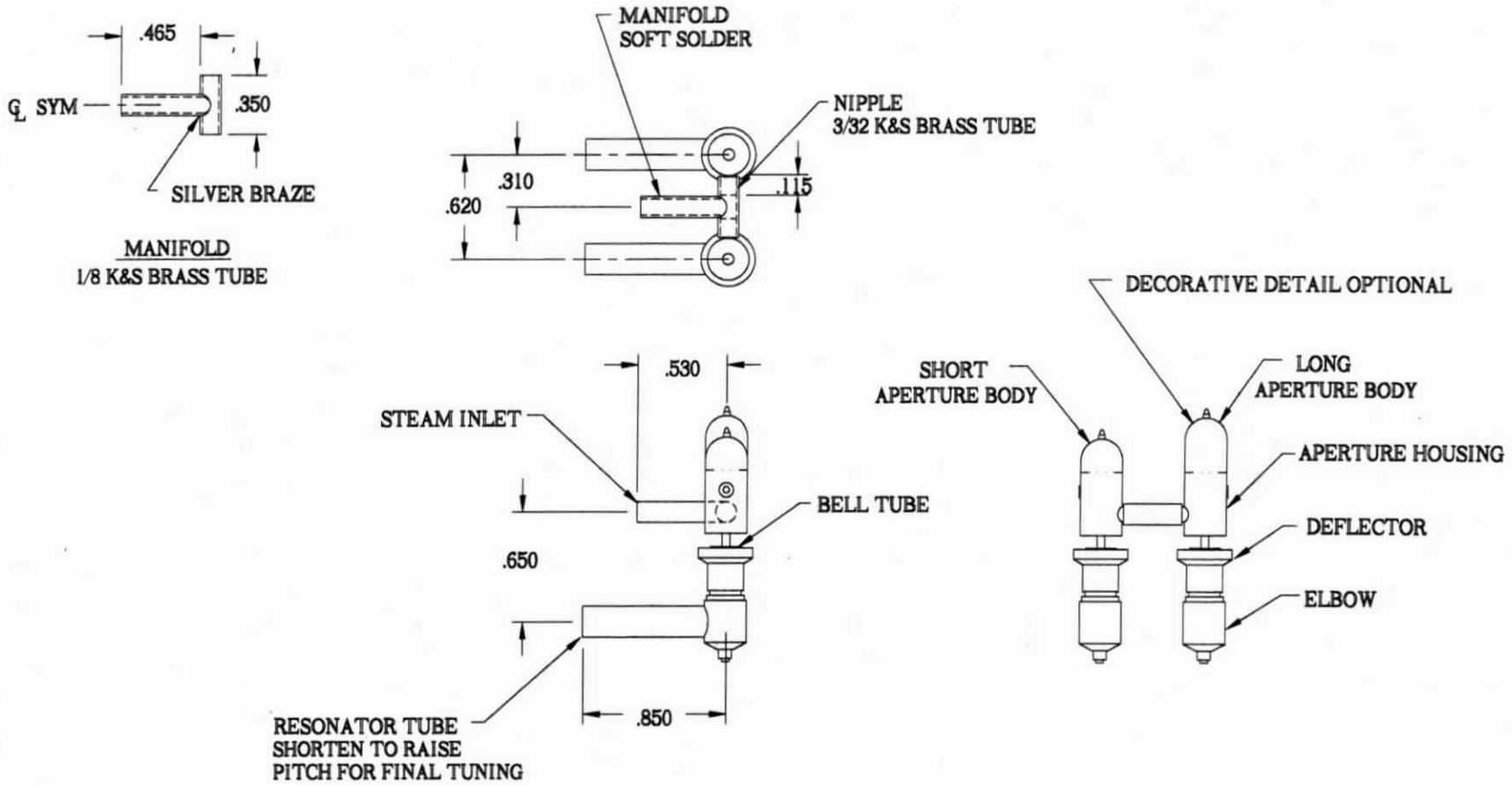


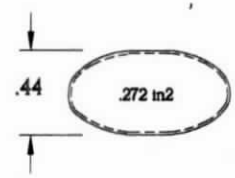
FIG 1

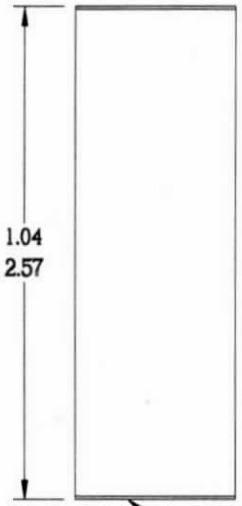
SEE STEAM IN THE GARDEN ISSUE #70 'THE RESONATOR WHISTLE' PART 3, FOR DETAILS AND INSTRUCTIONS.

L. BANGHAM 3-11-05

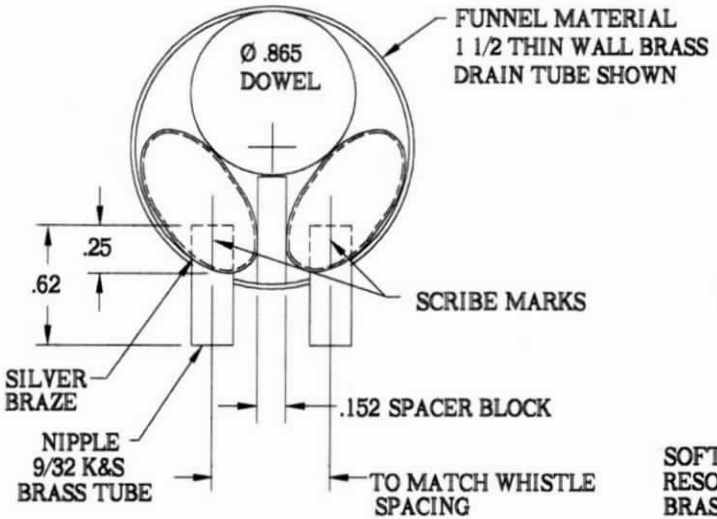
WHISTLE ASSEMBLY- 2 CHIME

whstl130

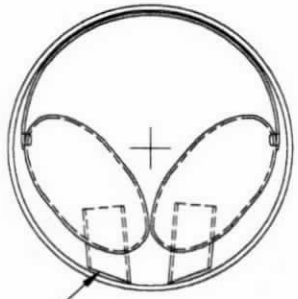




RESONATORS
21/32 K&S BRASS TUBE
ANNEAL AND FORM AS SHOWN

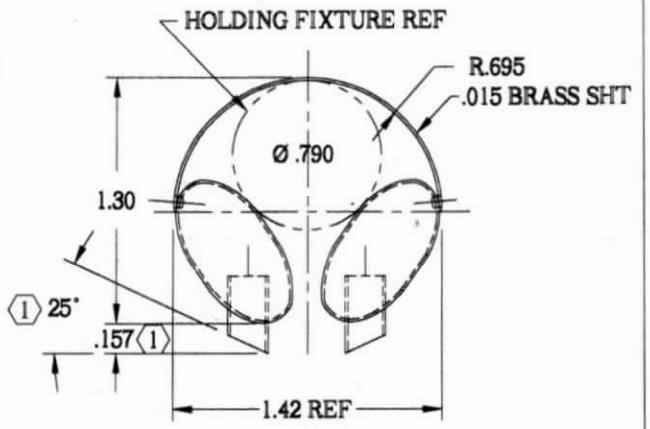


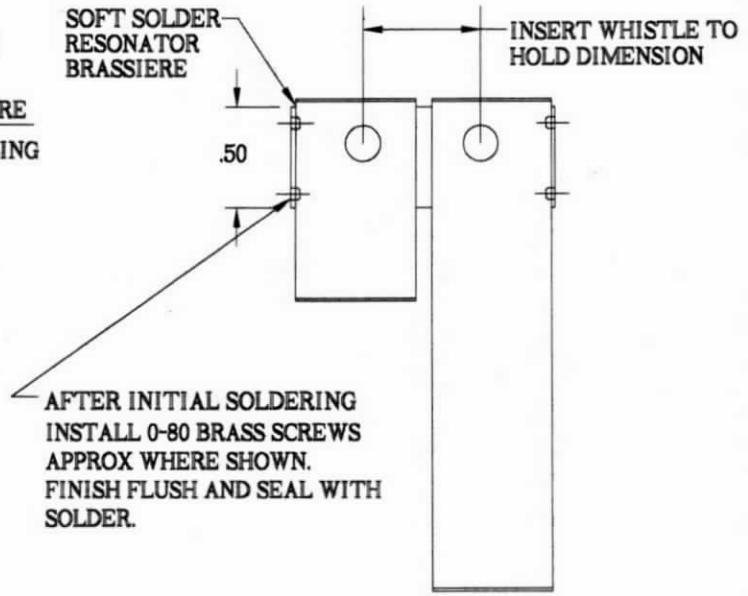
RESONATOR SPACING AND NIPPLE LOCATION FIXTURE
USE FOR NIPPLE ALIGNMENT CHECKING AFTER BRAZING



SHAPE NIPPLES AS REQUIRED ⟨1⟩

RESONATOR ASSEMBLY INSERTION





RESONATOR ASSEMBLY

FIG 2

RESONATOR ASSEMBLY
2 CHIME FUNNEL WHISTLE

whstl124

L. BANGHAM 2-21-05

is a raised 5th, F# (370 Hertz) and D (587.3 Hertz).

Resonators Figure 2

Cut and anneal the 21/32" K&S brass tube. Squeeze in a vise to the required dimension. Rough cut and silver braze the .015 brass ends in place. Finish ends by trimming, and using an abrasive wheel or hand filing.

Locate resonators in the funnel tube using a dowel and spacer block per Figure 2. I found an old broom handle that was just the right size (.865" dia). With the resonators aligned, use Dykem or equivalent, and using the measurement from the whistle, scribe the resonator ends with the nipple center lines. Extend centerline down to the hole location.

Drill holes using progressive center drills, #0, #2, and ream, drill or file to finished size. Silver braze nipples in place leaving approximately 3/8" extending.

Place the resonators in the funnel tube, resting nipples on top, and using blocks as per above to hold. Check the nipple angularity (parallelism) by inserting 3/16" K&S tubes, gauge pins, or drill shanks into nipples. Check both axis. The alignment can be corrected by 'leaning' on them in the right direction.

When satisfied with the alignment, the nipples can then be trimmed close to their final shape.

Resonator assembly Figure 2

The brassiere should preferably be formed on a slip roller, but can be hand formed over a piece of pipe or other suitable mandrel. Do not anneal this part, as it needs to maintain its springiness.

The parts can be jigged up for soldering as shown, with the whistle inserted in the nipples and a light clamping action holding things together around a suitable size dowel (broom stick handle).

For this type of clamping I have found that women's hair clamps, called 'Salon clips' are ideal. They have long curved aluminum jaws that can be reformed to most any shape, and a medium firm spring action. The ones I have were made by 'SCUNCI'. They come in a package of 10 for a couple of bucks, and were purchased at the grocery store.

The brassiere is soft soldered to the resonators to prevent the annealing effect of silver brazing. For heat resistant soft soldering I have been using acid core lead free 95% tin-5% antimony solder. It has the highest melting point of the available soft solders, 464 degrees, and is easy to work with.

In order to better ensure their survival in the funnel environment, after the soldering is done, the resonators should be mechanically secured to the brassiere with short brass screws, soldered in place and filed flush.

When squeezed, the assembly should be a snug, but not tight fit in the funnel. This can be done by shaping the nipples to fit (fig.2).

Americanizing the Roundhouse Fowler

by Peter Sidler

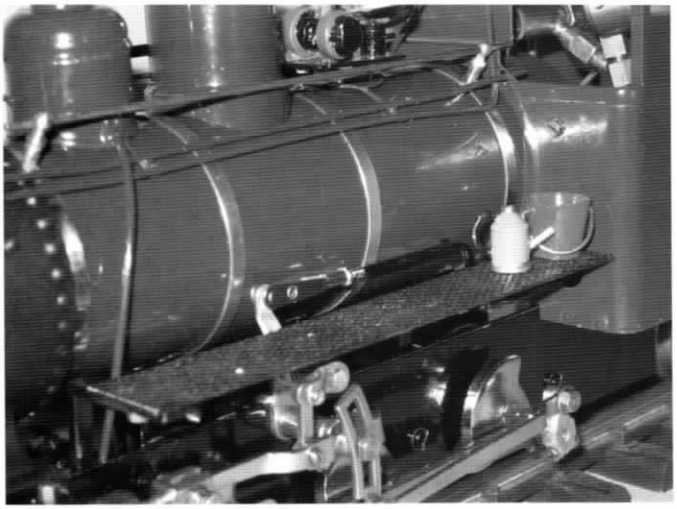
Cosmetic surgery for a Classic steamer

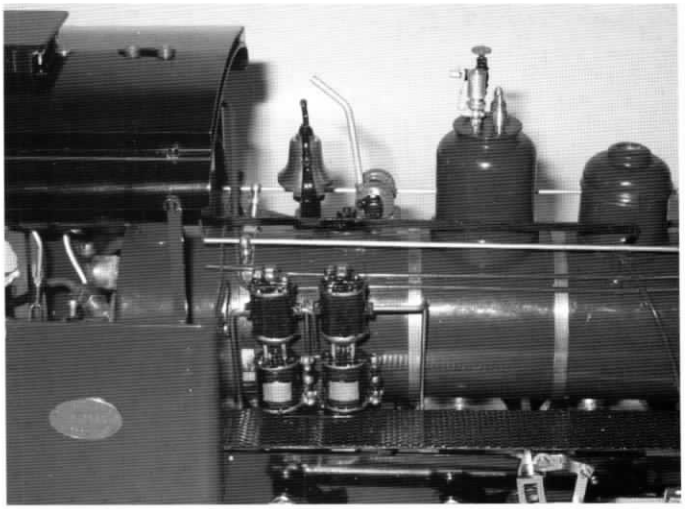
I live in Switzerland near the city of Biel / Bienne, and have been building live steam locomotives for 15 years. I'm a member of two clubs, the "Club Romand des chemins de Fer miniature" and the "US G-Scale Friends of Switzerland" the latter being more of a group of enthusiasts in Switzerland, Germany and Austria. For 12 years I built European models, but friends from the "G-Scale" persuaded me to change over to American models. I have been regularly receiving *SitG* since 1994.

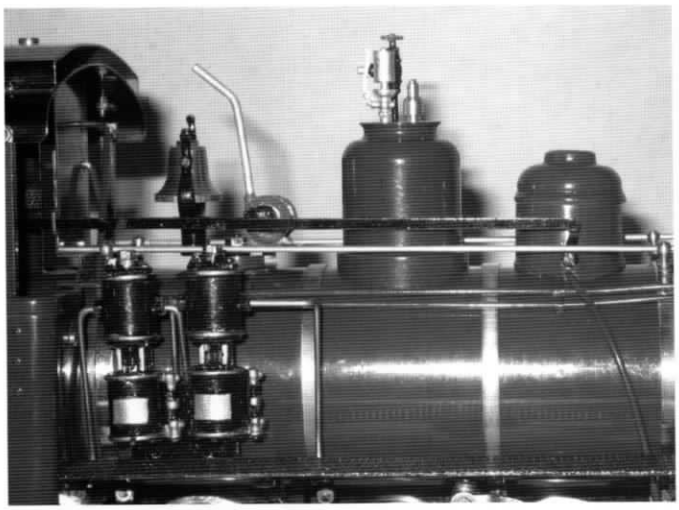
I have two twelve year old Roundhouse Fowlers, and the articles from Don Beach "Americanising the Lady" in *SitG* (#29 to #32) convinced me that to convert them. During a visit to my friend Otto Hadorn (readers of *SitG* will have heard of him) we got around to chatting about a conversion, and with a sly grin he produced a converted Fowler! What a surprise. I had time to measure it, which saved many hours of work and he gave me several detail photos. Now I could really get down to making the drawings.

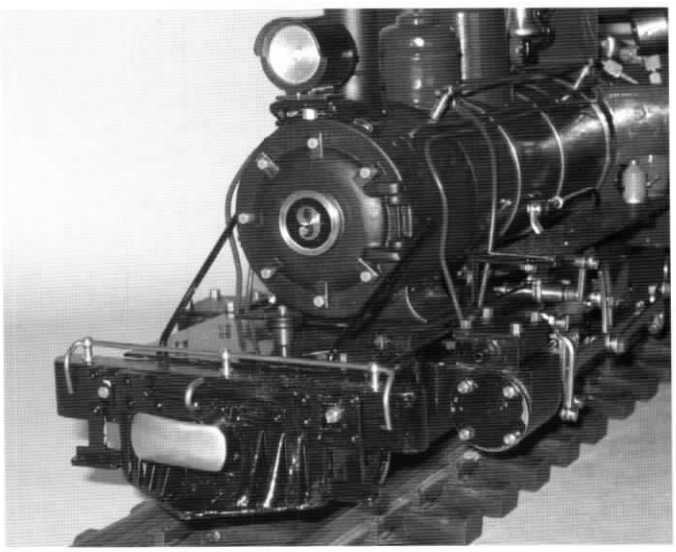
Stock Roundhouse Fowler above...author's Americanized version below.

I have to say that we only live in Switzerland during the winter, from the middle of October to the end of March, and this is the time that I can devote to my hobby, so timing

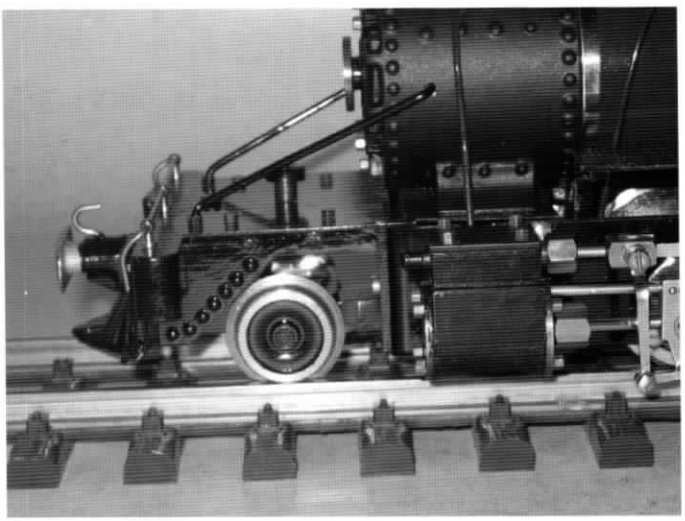









MBRR 9



was important.

In October 2004 I ordered the necessary parts; cow catcher, pilot beam, swing-bell, name plate and axles came from Roundhouse, as did the Westinghouse air pumps , tool box, oil can and boiler. The generator, whistle and steam-faucet came from Trackside, and the water hatch and re-railer from Ozark

First I milled a frame for the front footplate, which when screwed to the new frame served as a basis for the cow catcher and the new pilot beam. The footplate and sideframes are made of 1mm MS-sheet, the latter being decorated with brass rivets. Both deckbraces are made of 2mm MS wire, and a pilot truck controller was milled. The pilot truck is a copy of the existing trailing truck, and has been milled from solid brass.

Selt-contained working headlamp (see text). The author got this idea from an article in SitG #73 by Charles T. McCullough.

The original smokebox door handles were sawn off and 7 dogs fitted. A hole was bored in the centre to take a new number plate. The number 9 was cast, and fitted to the number plate. Upon completion the smokebox was sprayed with heat resistant lacquer and heat cured.

The rear sand dome was removed, and replaced by a plate on which the bell and gnerator were mounted.

I then made the 2 supports for the footboards and screwed them to the frame-spacers. The footboards are made of 1mm brass sheet, and 0.5mm checkerplate, which are soldered together using Tinol soldering paste. Roundhouse handrail knobs were soldered to the existing boiler bands, the handrails themselves are 2mm NIRO.

The steam dome was milled in aluminium, and both pop valves in MS. The latter, along with the whistle and steam faucet are screwed onto the dome with M 2.5 threads (BA8) . The blue paint on the dome is not quite the original colour, but you would have to be an expert to notice the difference.

The roof hatch was made of 2 MS angle, the lid 1mm sheet, and the hinges of 1.6mm screws. The hatch covers the gas valve.

The driver was originally a white metal German, but file, Dremel and a new coat of paint have converted him. (He now speaks fluent English). I have been severely reprimanded for omitting the white stripes on his uniform and cap!!

The lamp was milled in MS, the rear wall of which is fitted by 2 M 1.6mm screws with a contact screw at the rear. A reflector in aluminum is held in place by a conical peg. The 3-volt LED and the CR1632 button battery are separated by 4 insulating washers. Screwing in the contact completes the circuit, and the lamp burns. This idea also comes from *SitG*, with slight variations.

In the tender, the rear third of the imitation coal was sawed off, and replaced by an imitation water tank made of thin MS sheet, with rows of rivets. The water hatch from Ozark and the tank were glued together using instant glue. The air tank was made of MS tube with milled end pieces soldered in place.

As I needed a pedestal for the front lamp, I just sawed up the original one from Roundhouse, and what was left of the upper part made a very nice rear lamp. The ladder came from a model ship kit, and the tool box from Roundhouse, which they no longer produce. Four hooks in 1mm wire were glued into the tender for the Ozark rerailer to complete the picture.

Apart from the footboards, everything was brazed together, so that as far as possible the locomotive could be returned to its original state.

When I get the time I intend to build a longer tender and an enclosed cab – something like a C-16.

The locomotive was finished just in time to be displayed at the Hallendampf 2005 exhibition in Sinsheim, Germany, in January.

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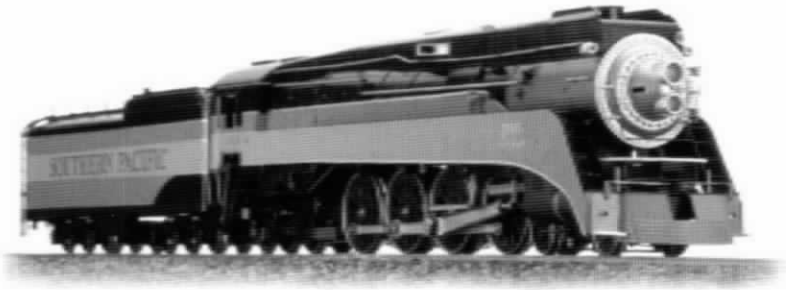

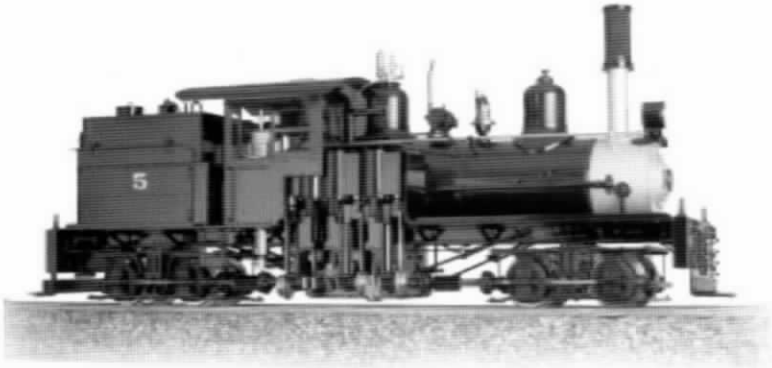

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National Summer Steamup 2005

a preliminary report

by Jim Pitts

The National Summer Steamup was held July 20-24th in Sacramento, California at the Lions Gate Hotel, McClellan Park. In early 2002, seven guys got together and formed Steam Events LLC to continue an annual steamup series originally begun by Richard Finlayson back in 1996.

Through a division of duties, the National Summer Steamup is currently coordinated by a committee consisting of:

Dave Cole handles publicity, advertising, promotional mailings and name tags.
Tony Dixon manages procurement and distribution of steamup shirts, aprons, and caps. Also, he shares in track refurbishing and storage.

Clark Lord is the secretary and responsible for security, keeping board minutes, agenda, and miscellaneous paper work.

Jim McDavid enlists and schedules seminar speakers and secures audio visual equipment.

Bob Trabucco refurbished the track, supervises track setup and tear down, as well as coordination of guest tracks.

Bill Turkel is responsible for fuel, steam oil, water, as well as door prize solicitation and distribution.

Sonny Wizelman serves as the treasurer and is administratively "generally useful" in facilitating coordination both within the committee and with the hotel management.

Approximately a hundred participants this year came from across North America. While the majority come from the West Coast, a number of persons in attendance were from the Midwest and South.

One of the highlights of the National Steam Up was a steam-cleaner built by Larry Bangham. The steam cleaner addresses in a creative and prototypical fashion the perennial problem of oily track by washing oil away with clouds of steam. The steam cleaner will be making guest appearances at steam ups around the country.

Clinics were offered on a range to topics:

Trams and things - Steve Ciambrone,
Coal firing - John Coughran
Assembling turnouts - Tom King
Fine tuning Accucraft Engines - Dave Hottman
Digital photography - Mike Martin
Building an Aster Kit - Pete Comley
Kit bashing and upgrading
the steam locomotive - Norm Saley

Come Saturday night there was a barbeque with door prize drawings and a "ShayUp" competing for the World's record for the largest number of Shay locomotives coupled together and running under steam. This followed Friday night's parade of Duchess locomotives.

In a future issue of *Steam in the Garden,* we'll have more pictures from the 2005 National Summer Steam Up. The 2006 National Summer Steam Up will be July 19-23rd at the Lions Gate.

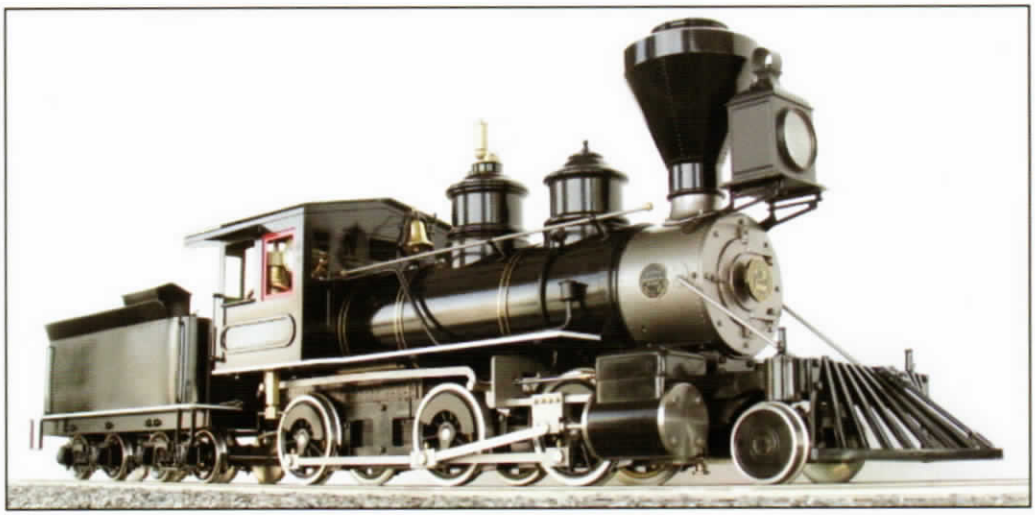
The "Gang of Seven"... organizers, movers & shakers for the National Summer Steamup
Front row (left to right) Dave Cole, Sonny Wizelman and Jim McDavid.
Back row (left to right) Bob Trabucco, Bill Turkel, Tony Dixon and Clark Lord

Larry Bangham tweaks his Steam Track Cleaner. Sure beats wiping 'em down with rags and alcohol!

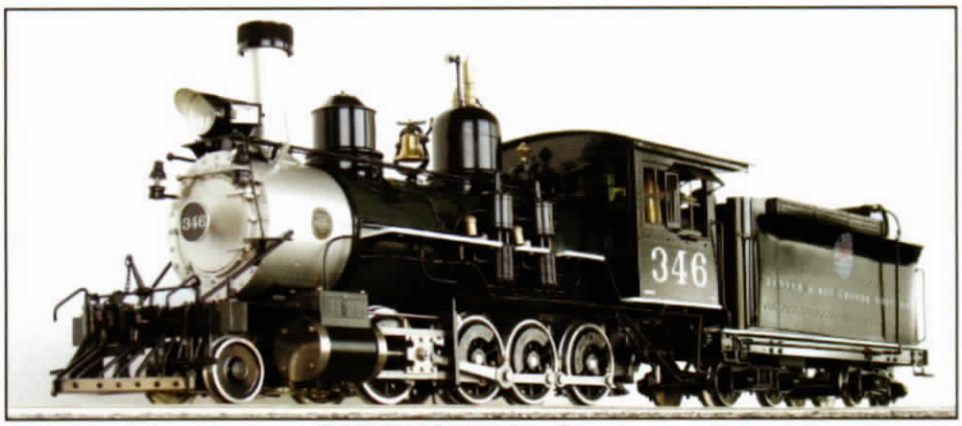
"I found it!" exlaims Jerry Reshew. Delta Airlines lost his luggage, but look where he found it, at the Sacramento Train Station. Norm Saley, the solver of all mechanical mysteries, beams with approval.

Eureka! It really works. Geoff Spenceley and Howard Freed beam with satisfaction as an Aster Duchess of Sutherland comes to life. Both experienced builders have just completed their Duchess locomotives in time for the Duchess Parade at the National Steam Up.

Timeless Beauties



N.C.N.G. Mogul 2-6-0 Live Steam
1:20.3 Scale, 45mm Gauge
Available Winter 2005



D&RGW C-19 Live Steam
1:20.3 Scale, 45mm Gauge
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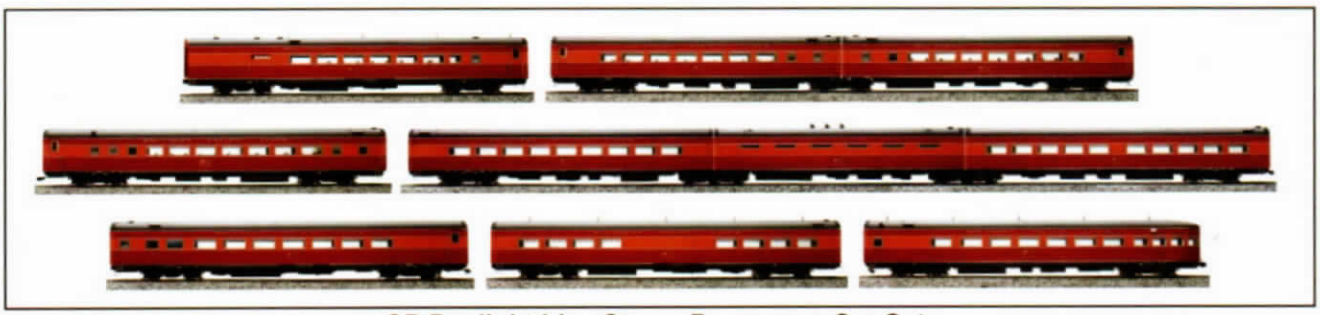

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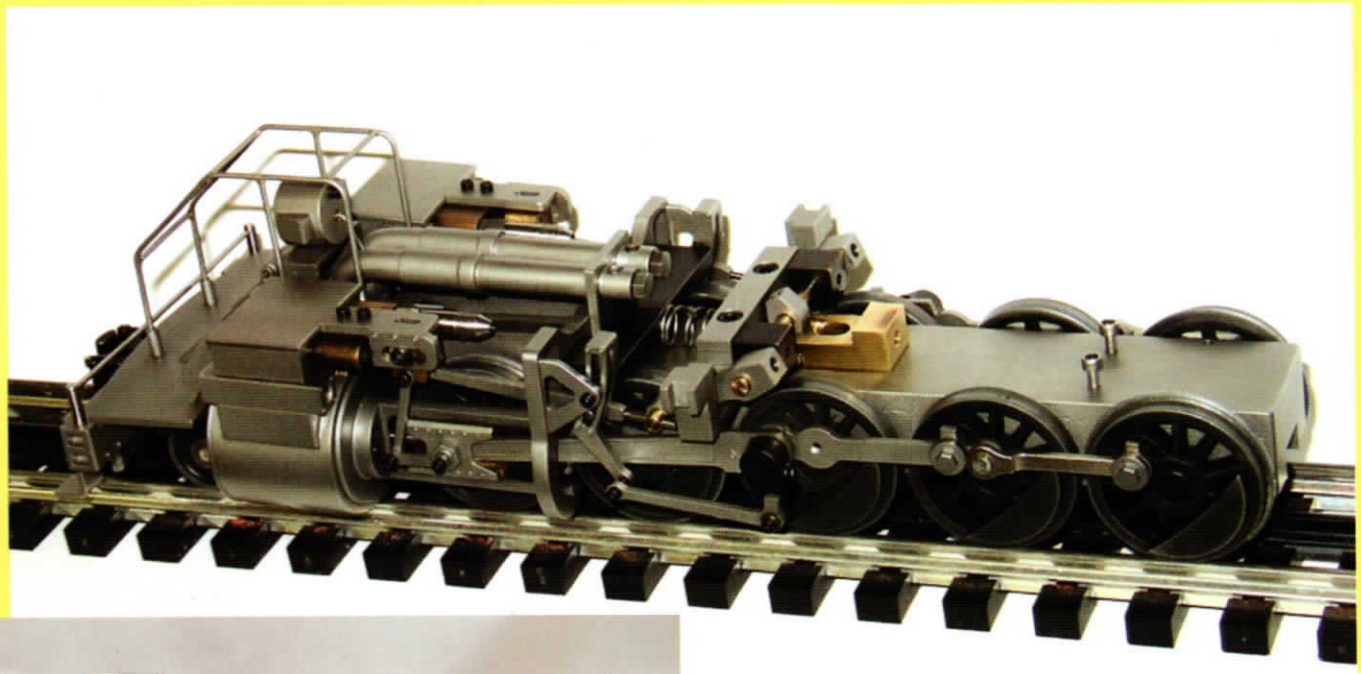
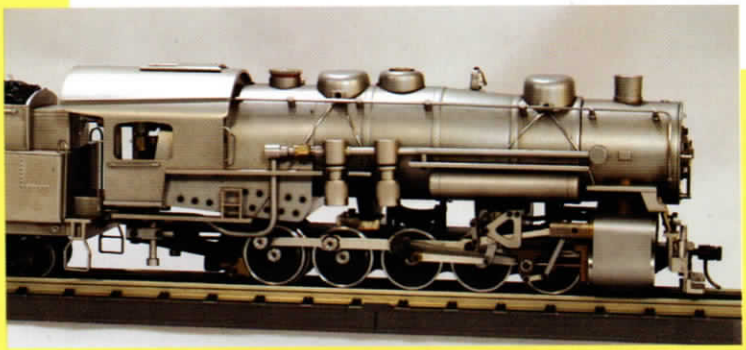
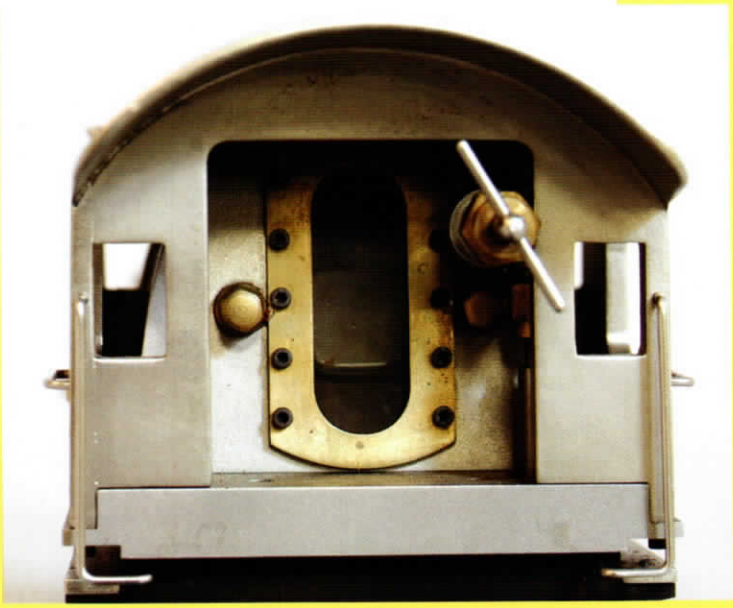






C&O C-12 0-10-0

by Charlie Mynhier

It was in the early 1950's, the Appalachian coal mines were in full production, the Chesapeake & Ohio was hauling coal with steam locomotives, and the ultimate Christmas gift would have been a Lionel train set, (I never got one).

My favorite thing to do was to accompany my Father when he went down the valley to visit one of his friends, who lived very close to a big coal tipple. While dad was visiting, I would watch those big Steam Engines work. I would watch as one of those big Mallies (Mallets) would come rolling up the rails, ever so slowly. I would hear the heavy metallic CLUNK, as the couplers came together, the Brakeman would hook up the air line, I could hear the surging air pressure releasing the brakes. I watched the power reverse lift the radius rods to the top of the expansion links. The Engineer would shift the engine into simple, there was sound like, ***sscheeeuu-chhuck*** as the steam operated valve shifed. The Engineer would open the throttle, there was silence, then the engine would start to move back. As the engine moved more, there was a sudden blast from the stack as one of the exhaust valves opened. Then there would be another, and another, and another, until there was a steady rhythmic blasting from the stack of that big machine. As the engine would back around the bend and out of sight, I watched the loaded hoppers roll by. There would be, creaking, groaning and rumbling as if they were protesting the trip they were taking. So I would stand there and listen to the sounds of that big engine until I could hear it no more. I grew up with a passion for things mechanical and especially the Steam Locomotive.

I never had the urge to own an electric steam engine, I always wanted the real thing, but there was none available. When I did see an imported steam engine in "O" gauge, I was disappointed in the way it ran and it did not even look like the engines that I love so much, so I decided that I would build my own.

My first attempt at building a real steam locomotive was in 1975...it was an 0-4-0, HO Gauge. The driving wheels were taken from an electric engine and the rest was scratch built. It was a crude little thing and the boiler would not boil water (a rather serious character flaw if you are a steam engine!) I was able to run it, though, by sitting a larger stationary boiler at the crossover of a figure eight track and piping steam to it through a silicone umbilical. The reason I needed the figure eight track was so that the umbilical would not continue to wind up and defeat its purpose.

Twenty eight years and fifteen locomotives later, I've built this Chesapeake & Ohio C-12, 0-10-0 switch engine.

The engine is made almost entirely from stainless steel, except for the cab and running boards which are mild steel, and nickel plated. I am fully aware of the problems that stainless steel brings to steam boilers, but none of these problems affect this engine. It's all in the way it's designed.

I am able to do things in this scale that would be impractical in larger scales, or in full size. One example is the backhead, firebox, and everything from the rear sand dome back, is milled from one solid piece of 17-4 stainless steel. I use stainless for two reasons, first it is a very poor heat conductor, so it holds the heat inside where it can be used to run the engine instead of warming up the surroundings. Second, I think its a beautiful metal with beautiful characteristics.

The tender is made from brass, and nickel plated to match the engine. The propane tank is made from a 1-1/4" Stainless Steel hydraulic tube with stainless ends held together with an internal stay bolt, which is also stainless. The valves and fittings are brass, the fill valves are commercially available tank valves.

Some of you may have noticed the factor of adhesion (weight of engine on drivers divided by tractive effort) is very low compared to full-size practice. It is true that this engine will spin the drivers with no problem at all, if the load is great enough. In full-size, slipping the wheels could and often did do serious damage, the kind of damage where another locomotive had to be sent out and drag the crippled engine back to the shop for a week or two of repair. The C&O 0-10-0 had a factor of adhesion of 4.68, my engine has 1.16! Unlike his full size brother, it is impossible to damage this engine by spinning his wheels, so I could pull just as many cars with a whole lot less pressure, but pressure means heat, and heat

loss is severe in this scale so I keep the pressure high for the heat. Since I have an excess of heat, I can afford to lose some while trickling the steam into the cylinders for very slow running. This engine can pull so many cars, and go so slow, you will get bored waiting for the train to go by.

To run this engine, we need at least 072 track. First we remove the lubricators disguised as single acting air pumps (the kind the prototype had), empty the water and old oil, fill them full of steam oil, and thread them back into the line. Secondly, we fill the boiler with distilled water, about one quarter inch down from the top of the sight glass, (see photo). Thirdly we fill the propane tank with a special adaptor. I use the transfer method of venting through one valve while liquid propane flows in through the other, this should be done outdoors as some gas will escape into the atmosphere.

Now we are ready to light the fire. The gas valve is located on top of the tender, sticking out from the back of the coal bunker. Listen for the hiss inside the flue, stick a match to the smoke stack and the fire will pop back into the boiler. You will hear a howl until the flue warms up, then there will be a soft roar and heat coming out the stack. Now all we have to do is wait.

While the engine is building up pressure it should sit by itself on the track. Now is the time to put a few drops of oil on the pivots of the connecting rods. When the safety valve lifts, indicating the pressure is up, open the throttle and let the engine run forward a short distance, then shift into reverse and let him back into a waiting train. The reverse lever is conveniently located under the air tank on the fireman's side of the engine (see photo). By now, we have a more personal investment in pulling a train than ever before, imagine the satisfaction and pride you feel as the engine couples to a string of 50 or more cars, hesitates while pressure builds and starts them rolling, huffing and puffing while dragging them away.

While running it is very important to keep your eye on the sight glass and add water to the boiler through a one-way valve located where the steam dome would be on the original (see photo), water can be added without stopping the engine if a force pump is used and walking along beside it. We are now pulling freight with steam, and this is as real as it gets.

Scale: 1/4" = 1'- 0"

Gauge: "O"

Cylinders diameter and stroke: .5625 x .625

Tractive force: 7 lbs - 2 oz (calculated)

Drivers, diameter: 1.0625 (51" scale)

Weight on drivers: 8 lbs - 4 oz

Driving wheel base: 4.75 (19"-0" scale)

Fuel: Propane

Steam pressure: 45 Pounds per Square Inch

Evaporative heating surface: 16.2 Square Inches

Superheating surface: 3.2 Square Inches

Tender capacity: 45 minutes (until propane tank needs refilling)

Total length of engine and tender: 20 1/16"

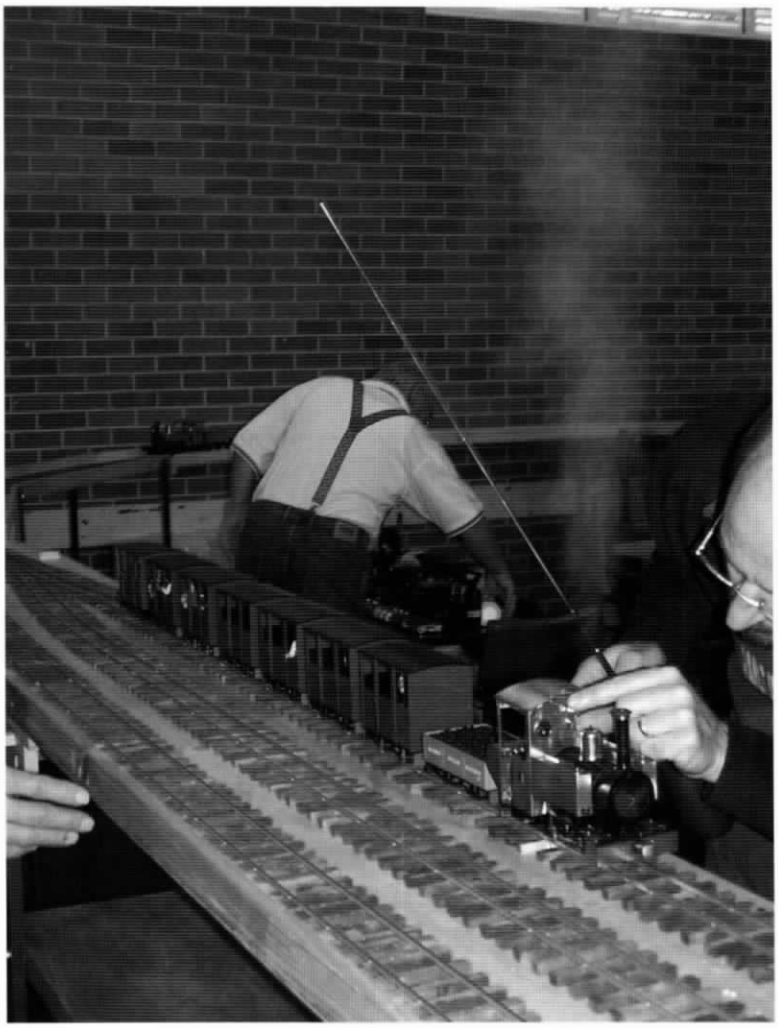
Raising Steam Downunder

by Geoff Horne

Now you are all probably aware that Australia is a very large place. The thing that you probably are not aware of is that there are not many of us to occupy all of this space, so the chances of two Garden Railway enthusiasts living in the same street are quite remote.

With this fact in mind and with the knowledge that there has only been one attempt to bring people together who are interested in this facet of the railway hobby in Australia, our small informal group attempted to remedy this situation recently by staging the inaugural ***Garden Railways In The Hunter – Steamup 2005.***

The only time that anyone gets to see the large scale trains in Australia is either at the local live steam park (3 1/2", 5" and 7 1/4" gauges) or a temporary layout on the floor at the local train or model show. This thing on the floor, which is generally electrically powered, certainly gets the kids interested but not the parents because they are imagining how much room inside the house it is going to take up. The adults aren't generally made aware of the fact that these trains are very happy running around OUTSIDE and that they can blend in very nicely to a garden setting.



32mm Gauge 0 Robin, gas fired.

I realise that I am preaching to the converted in this magazine, however, think about it for a while and ask yourself, "is this impression being projected to Joe Public at these shows"? I am not saying that there isn't a need to be at these shows, just that we need to get people thinking laterally to include that big space called a back yard.

When I first mentioned to my wife last October that I was thinking about suggesting a Garden Rail event she was not impressed. No doubt this reaction was generated by the knowledge that I had been so involved in the starting of a model show in Newcastle in 1986 which is still running to this day, she knew how much organising goes into such an event.

With that hurdle out of the way I tackled the next one by mentioning it to our little group at the weekly steamup day. Reactions were varied but within a short time we were in agreement that something like this to bring everyone together was needed.

By the following week we had a projected budget and a venue and the grim reality that we needed to build a layout for the attendees to run on.

We set about designing a modular layout of

twenty pieces which, when assembled was 42 feet by 24 feet. I offered the use of my garage for the construction, however by the time we actually started work on it, we were already at the end of January 05.

The layout consisted of two loops of hand laid code 215 brass rail on hand cut and laid sleepers (ties). There were two gauges, 32mm (gauge 0) and 45mm (gauge 1). Each loop had a passing loop and a steaming bay and featured stub switches in place of standard turnouts. Many people attending had never had the opportunity to see them in use but were more than pleased with their performance. Anyway I am getting ahead of myself here.

The layout neatly stacked.

Like all new events, it is easier to start small and this was the case here. The weekend catered for roughly 30 dedicated garden railway enthusiasts as well as some newcomers who by the end of the weekend had decided that this was the way to go in a hobby. This in itself made the weekend a total success.

Sponsorship plays a large part in staging any event and this was the case with us as well and we thank all companies and individuals concerned. A list of all sponsors and supporters is available for view at our web site: www.users.bigpond.net.au/geofhorn

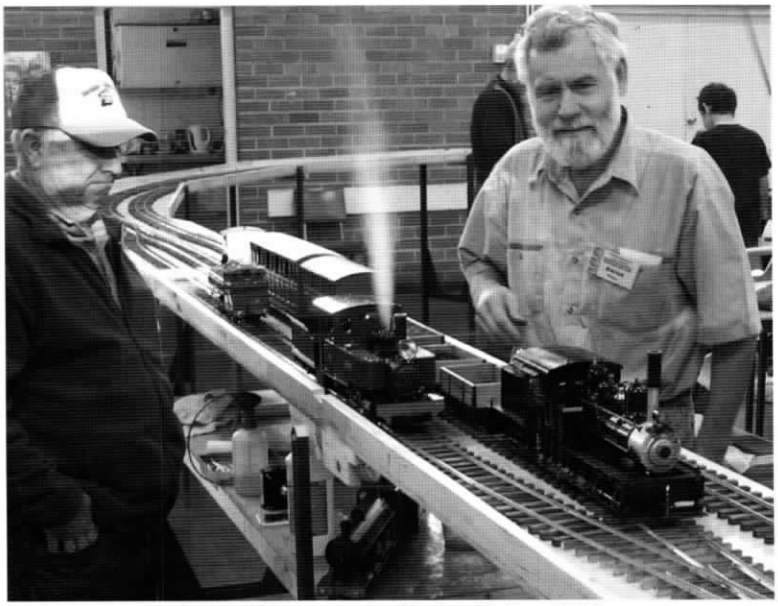
L-R Peteer Fitzgibon, Jack MacMicking and Gordon Watson renewing old friendships.

Now back to the weekend.

An early start on Saturday morning saw the layout and another 32mm layout kindly loaned by John Simon assembled and ready to go by the time the attendees began arriving. Old friends were reunited and a lot of new friendships began over a hot cup of tea and coffee.

Some of the most knowledgeable people in the hobby in Australia were there to pass on what they had learnt over many years. As a relative newcomer of only three years to this type of railway modelling I was ready to soak up what ever information that I could and I certainly wasn't disappointed.

Steam was raised within



Coal fired* Ernest *built by Brian Wilson.

about ten minutes of the official opening and with very little fanfare the loco began the first official circuit of the new layout. To our great relief it negotiated a full circle and also ran the turnouts without any derailments. Well, that was the first test of the weekend.

The loco roster was varied indeed, with everything from the most obscure brands to the one off originals and with fuels from gas, alcohol and coal and I almost forgot clockwork and battery.

One table was almost black with two and three cylinder shays from Aster and Accucraft, and I would challenge anyone to tell me that they don't enjoy seeing all of those moving bits and pieces flying around as the locomotive crawls past at about walking pace.

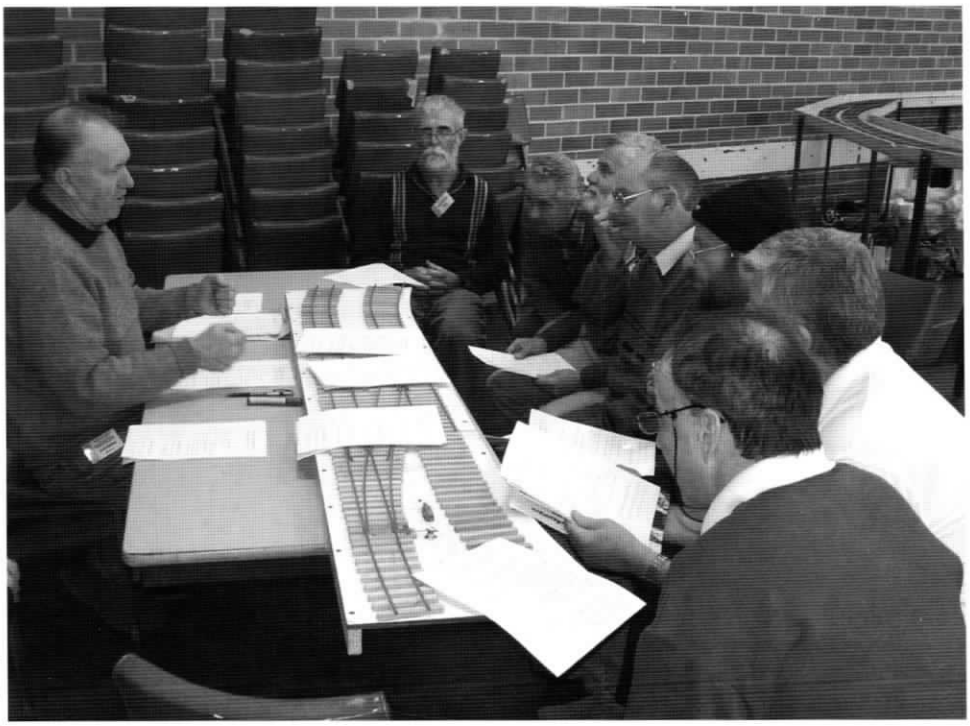
Of course the English side of the hobby was well represented by Aster A3's (Flying Scotsman), Aster Schools class, Aster Stirling Single, Allan Shorter Furness Railways tank loco and one of the latest offerings from Roundhouse in the form of a Vale of Rheidol 2-6-2 tank loco.

Quite a few scale models of Australian locomotives were also in attendance such as an Argyle NSW (New South Wales) 19 class 0-6-0, NSW 36 class 4-6-0, a Queensland Govt. Railways A10, and the real star of the show that stopped everything else when it ran, a massive Aster AD60 Garrett 4-8-4- 4-8-4. At about three feet long, this centipede held everyone's attention especially when going over joints.

Brian Wilson from Queensland ran his fine model called ***Edwin***, a model that has been featured in a series of construction articles in a local model engineering magazine. Copies of this model are popping up all over the country and it is certainly a fine runner. Brian also had with him the coal fired version of ***Edwin***, and this was the first time that I had personally seen a garden railway loco running on coal. It certainly brought back a lot of childhood memories with the smell of burning coal. Brian also had a model of an 18" gauge Hunslet steam loco that ran like a Swiss watch.

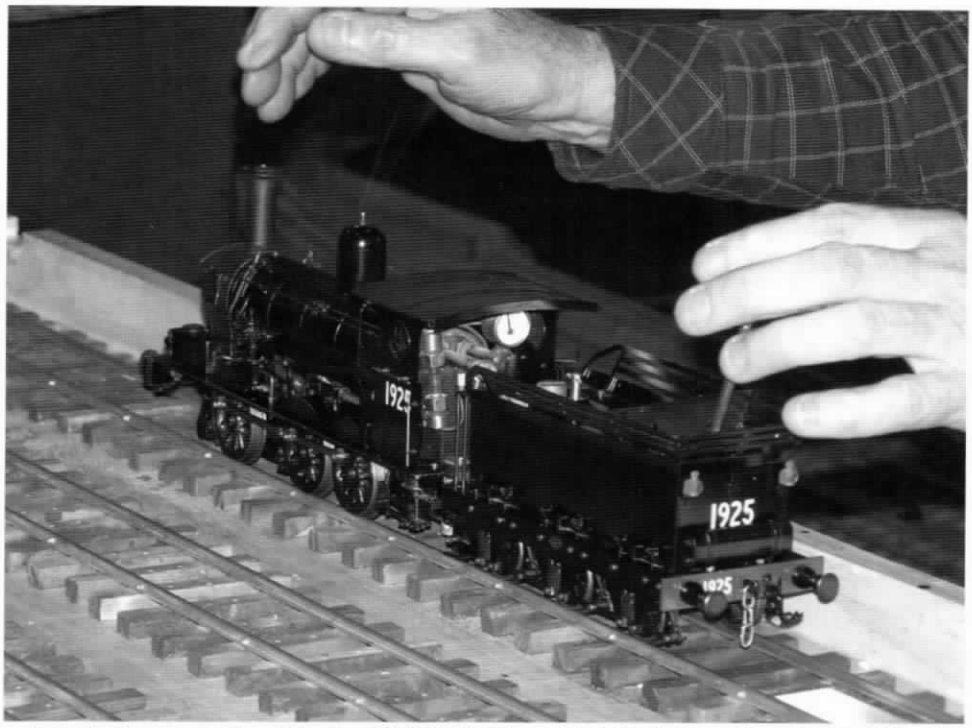
The most unusual locomotive of the weekend would have to be that owned by Peter Madgwick. This loco is powered by a gasoline model engine and drives a generator which in turn supplies power to four traction motors. Although a little on the noisy side it performed extremely well and makes the driver feel as if he is in the cab of a real diesel electric locomotive.

Michael Ragg being the only person to have a



Valve Design Workshop by Gordon Watson

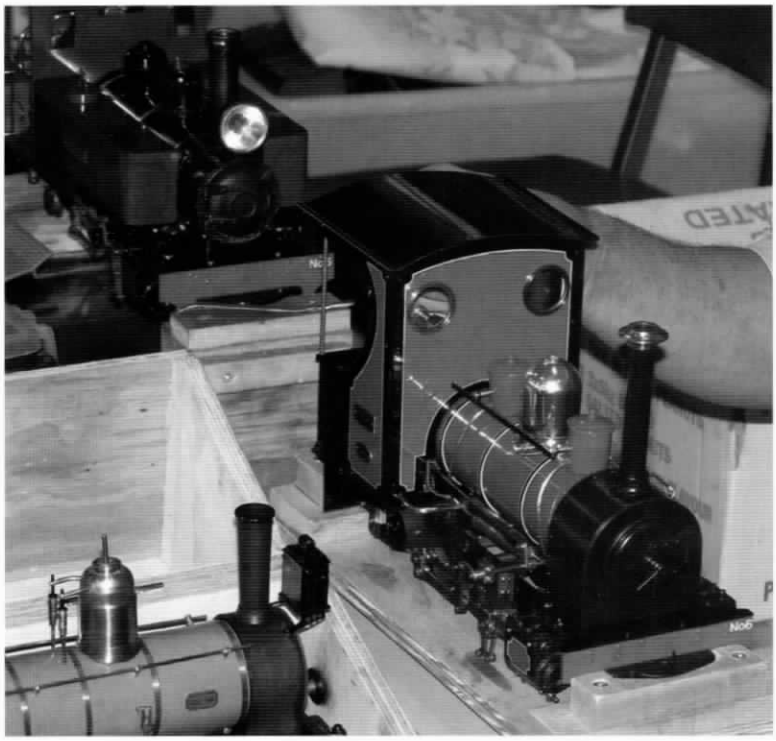
bag full of 32mm locomotives had a ball all weekend as the inside circuit of O gauge track was all his. I am sure that he still hasn't removed the smile from his face at his good luck. Michael's roster consisted of cute little steamers such as a Robin and a Cricket and a few others that I failed to find out about. As an organiser it very difficult to find time sit down and have a chat with all of those people that you would like to talk to. Maybe next time!



Argyle Locomotive Works NSW 19 Class 0-6-0 Gauge 1 - alcohol fired.

Four workshops were held and covered the following subjects. Yours truly gave the first talk on the construction of Stub Switches, followed by Paul Trevaskis and Michael Ragg on the development of the new regulations for the construction and testing of boilers for small steam engines in Australia. Sunday saw Gordon Watson give us the benefit of his design skills and also tell us the differences between the various types of valve mechanisms on live steam locomotives before Paul Blake gave us his very interesting talk on one of the now nonexistent steam tramways of Queensland and how it could be applied to garden railways.

All workshops were well received and, since they were held in the same hall as the running was taking place, we all put up with a bit of background noise.


Brian Wilson's 18" narrow gauge Hunslet.

The word 'convention' was never mentioned in the advertising of the event because to us it denotes being regimented and organised. This was the furthest thing from our mind as we wanted it to be a 'get together' and very laid back. I believe we achieved this and as organisers we all had time to enjoy it as well because the attendees ended up helping to run the event.

Chef Evan Horne kept the food coming all weekend as well as a fine dinner on Saturday evening, and I would say he has made a few new friends as well. The only suggestion arising concerned him, with one person requesting a pair of training shoes to be included in the registration packs so that they can exercise away the extra pounds.

Everyone received a show bag on arrival with a lot of goodies included, as well as workshop notes and freebies donated by sponsors.

Smiles were the order of the weekend and everyone gladly complied with the direction. Personally I had a great time and it was definitely worth all of the hard work in build-

ing a new layout in a little over three months at a weekly rate of about 5 hours. It had only been assembled only once prior to the show and everyone was most impressed at the height and the ease of assembly. Twenty sections can be assembled in about 40 minutes and pulled down even quicker. It is also designed to stack away into a single pile about 6' high. The idea came from some photographs of the layout built in the UK by the East Anglia Group. Isn't that what modelling is all about – borrowing ideas from others!!

Michael Ragg's 32mm Cricket.

There is a DVD available of the great time we all had (43 minutes running time) and it is available from:

Garden Railways In The Hunter, 29 Kenley Crescent, Macquarie Hills, NSW Australia 2285

or contact me at: geofhorn@bigpond.net.au

The cost is AUD$20, which includes postage, and funds will go into helping with the next one. YES, we will be running another one. With everyone asking "When is the next one on?", I don't think we could just walk away now and let someone else do it next time. However, maybe someone else might get the urge to run one as well and give us modellers a chance to move around a bit.

With the short time frame in organising this show we were not able to cater for the sparky side of the hobby, but just maybe we may have spurred someone into building an electric layout to bring to the next one.

I have struck up some more friendships as well as being able to put faces to the names of people that I have spoken to in the past or have seen in photographs in publications.

It may have been a small event by many standards, however, I doubt that anyone attending would be complaining. Everyone had plenty of time to run their trains and mingle and relax. Life is stressful enough without an outlet like our great hobby.

See you all next year.

Les lecteurs francophones peuvent contacter Guy Ozanne pour obtenir, gratuitement, une traduction sur un element de texte paru dans SitG. 41 rue Jeanne d'Arc, 94.500 Champigny, France.
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Getting Inspired in Pennsylvania

by Matthias Warmbold

Having recently attended the East Coast Train Show (ECLSTS) in York, PA, for the first time, I would like to encourage those who live in reasonable distance to add it to their agenda. The show is held on the first weekend in April, starting on a Friday afternoon and ending on Sunday afternoon. Two halls are dedicated to the show; one for operating layouts and one for dealers and manufacturers.

I was attracted by the layouts and spent the whole morning there. It was very inspiring to view the nice layouts (nearly all in G-gauge with electric engines) and talk to the owners and operators. To my surprise, there was also a live steam track with over 100 ft of dual main line set-up by some live steamers from the area. This was my first opportunity to see some antique live steam engines, like two from Märklin from 1930 and 1950, in operation. Many of the visitors gained first hand information about live steam.

I have had the great honor to get acquainted with Lawrence "Yogi" Wallace and his wife. They displayed bridges, buildings and walls, which Yogi had created from scrap materials and that looked more realistic than any product I've ever seen. Assisted by his wife, Yogi demonstrated various techniques and tools that he used to create his structures. I got hooked to their stand in the lay-out hall for quite some time and enjoyed every minute of his demonstration.

Having spent so much time in the lay-out hall, I discovered too late that one of the dealers was selling Aristocraft metal wheelsets for $12 a pack. In this hall one could buy all the items for a state-of-the-art garden railway empire; from tracks to miniature plants. Since it was my first time to see an assortment of plants for garden railways, I was impressed by the great variety of plants offered. A few live steam engines were on sale, but this wasn't the place to shop for live steam items.

I didn't have time to attend any of the clinics nor did I participate in the model contest organized by Large Scale On-line as one had to leave the entry till the end of the show. On Sunday morning I decided to drive 45 min. east through the Amish country to the Strasburg Railway, operating a steam train on the first line in America. Arriving one hour before the first departure (on that day at 11 am) provided ideal opportunities for taking photos. One of the only three camel back engines still in existence is parked outside; it requires a lot of work. Just opposite of the Strasburg Railroad is the Railroad Museum of Pennsylvania, which did not open before noon and therefore I could not visit. Another good opportunity for smelling burning coal is the National Park Steamtown, located is about one and a half hours north of York in Scranton, Pennsylvania. For those interested in American history and manufacturing, the area around York (i.e. Gettisburg, Hershey, Harley Davidson, etc.) has a lot to offer.

In summary, this was a great weekend trip where I saw the complete spectrum of the garden railway hobby and rode in a beautiful coach on the first railway line in America. To facilitate planning your trip to the next ECLSTS in April 2006, here are some links:

http://www.eclsts.com/
East Coast Large Scale Train Show;

http://www.stratuswave.net/~wd8jik/
Lawrence "Yogi" Wallace (lots of tips);

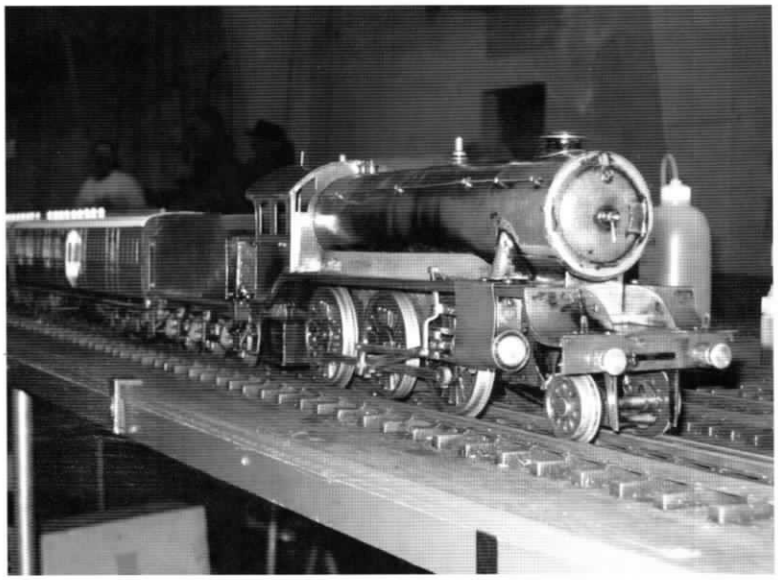
http://www.strasburgrailroad.com
Strasburg Railroad;

http://www.rrmuseumpa.org
Railroad Museum of Pennsylvania

http://www.nps.gov/stea/exc.htm
Steamtown Historical Site

Spectators at the East Coast Train Show in York, Pennsylvania were attracted to the live steam trains like iron filings to a magnet.

Noel Crawford was just one of the live steam enthusiasts who participated in putting on a great show for the Train Show attendees. Here Noel is seen moving the pilot model of Accucraft's K-28 onto the turntable, lining it up to pick up a train for a run on the mainline. Noel reports that the K-28 is a sweet running loco.



Murray Wilson's vintage Bassett Lowke gauge 1 Mogul. It's a real crowd pleaser! Murray tells us that it was probably made in 1926 as it is his belief they only ever made the one batch.

The Nuts and Bolts of Shays

The introduction of piston valves and crankshaft brackets

By Dan Rowe

A lot of my Shay research has been on the unusual engines. This mainly started because I file the drawing card indexes by bore and stroke and then numerical order. This gives a much better picture of how a class of Shays developed over time. I put the engines that have only one example in a separate file labeled mutts.

Shop number 591 is in the mutt file. This Shay was drawn - and I believe built - for 3-foot gauge. The United Verde & Pacific Railway, a copper mining operation at Jerome, Arizona ordered this Shay but never took delivery. S/N 591 was regauged to standard gauge and shipped 2/21/1900 to the Washington, Idaho & Montana Railway Co. of Potlatch, Idaho. The steam engine had 3-12x14 cylinders and piston valves that faced out. Indirect Stephenson valve gear with a rocker shaft similar to the system used on S/N 341 (described last issue) was also used on this engine.

The drawing on page 39 is a composite of the cylinder drawing and the detail sheet for S/N 591. The cylinder drawing is linked with centerlines and the parts from the detail sheet have their names printed underneath. The rest of the link motion not shown is connected to the link block pin in the usual fashion and is the same as normal direct link motion used on most Shays. The valve stem and piston rod glands specified Jerome metallic packing. The use of metallic packing was common practice but the only mention I have seen in the drawing card indexes of the Jerome brand is for S/N 591.

The DCI for S/N 591 lists cylinder #2 and #3 as piston valves and cylinder #1 as a slide valve. The column for pattern numbers list no pattern for the piston valve cylinders, and the pattern numbers listed for the slide valve cylinder are the old piston valve numbers. The drawings add a few more clues to the mystery of this unique engine.

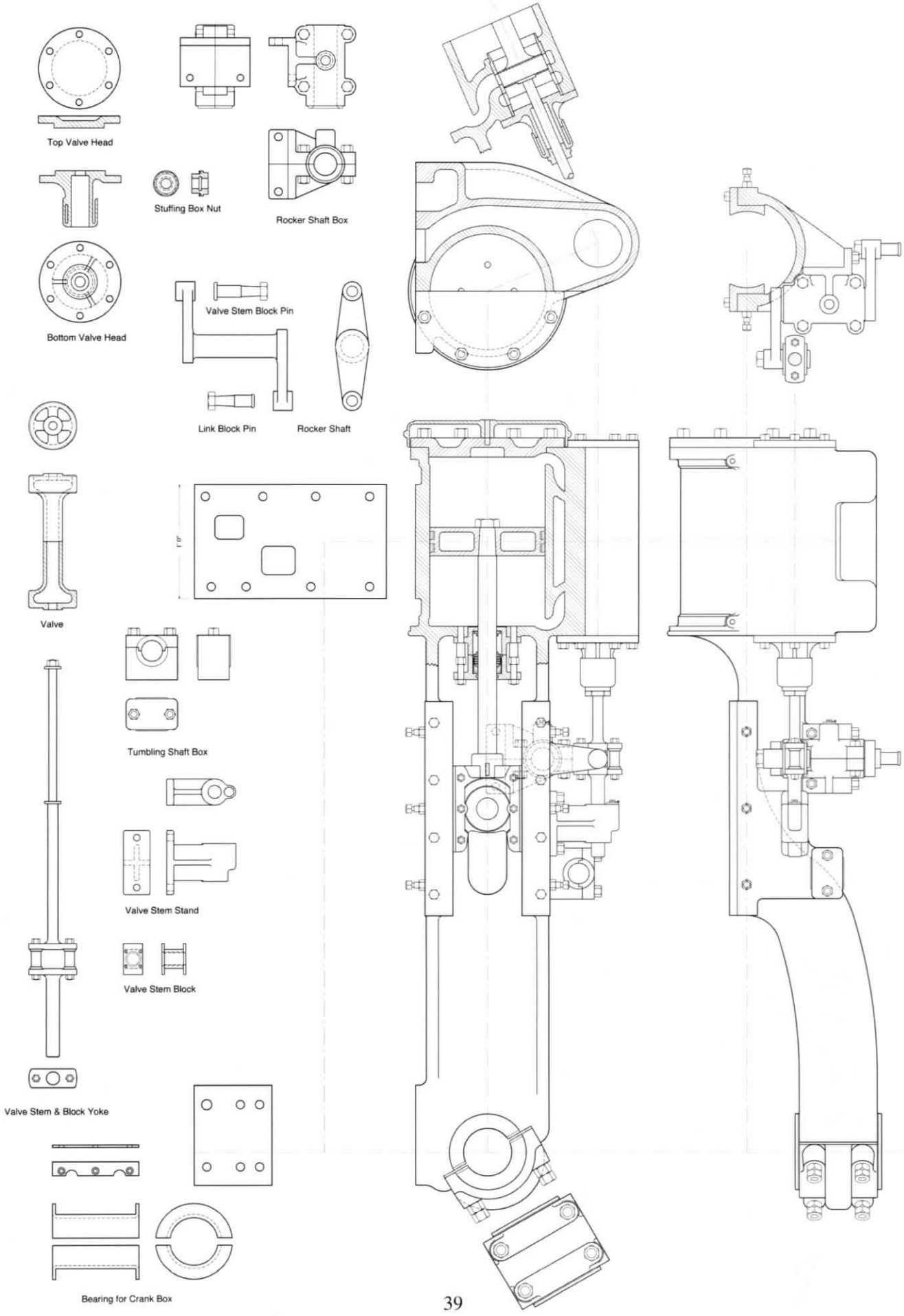
The original piston valve sheets do not have dates, but the replacement sheets showing the slide valve cylinder are dated 4/9/1900 and 4/12/1900. It seems to me that the cylinder patterns were changed to slide valves only a few months after this engine was sold. At some unknown time a replacement cylinder was ordered for cylinder #1 making this engine truly one of a kind.

The full text of a general office memorandum from the Allen County Historical Society collection dated 5/25/1923 is as follows:

"Potlatch Lumber Co.- Elk River. Idaho. Mr Belford reports under date of May 19 as follows: "Calling here I met Mr. Blume, Manager, and all mentioned seeing all engines and in fair shape except #591. This engine has crown bar boiler and the piston valve. This engine is cut to 135# steam account bad firebox. I cannot see why and the Hartford man allows 175#. This engine they say when it had 180# that it would pull more than 70 #2376. Engineers say they like this valve better than the slide valve. These valves are indirect motion account of rocker arm.""

The boiler pressure of S/N 2376 was not specified but at the full pressure of 200 lbs, the 3-12x15 engine should have put out more power than S/N 591. Why the piston valve was abandoned and not reintroduced until 1927 when market pressure from Willamette forced Lima to build the Pacific Coast Shay with piston valves will probably never be fully understood.

The other main topic in this issue is the introduction of the crankshaft bracket. My search for the first one-piece crankshaft bracket led to the observation


Top Valve Head
Stuffing Box Nut
Rocker Shaft Box
Bottom Valve Head
Valve Stem Block Pin
Link Block Pin
Rocker Shaft
Valve
Tumbling Shaft Box
Valve Stem Stand
Valve Stem Block
Valve Stem & Block Yoke
Bearing for Crank Box

that large engines starting around the turn of last centaury were actually made from three separate castings. The cylinder barrel was bolted to the cylinder frame that supports the crosshead guides and this assembly bolted to the crank bearing box.

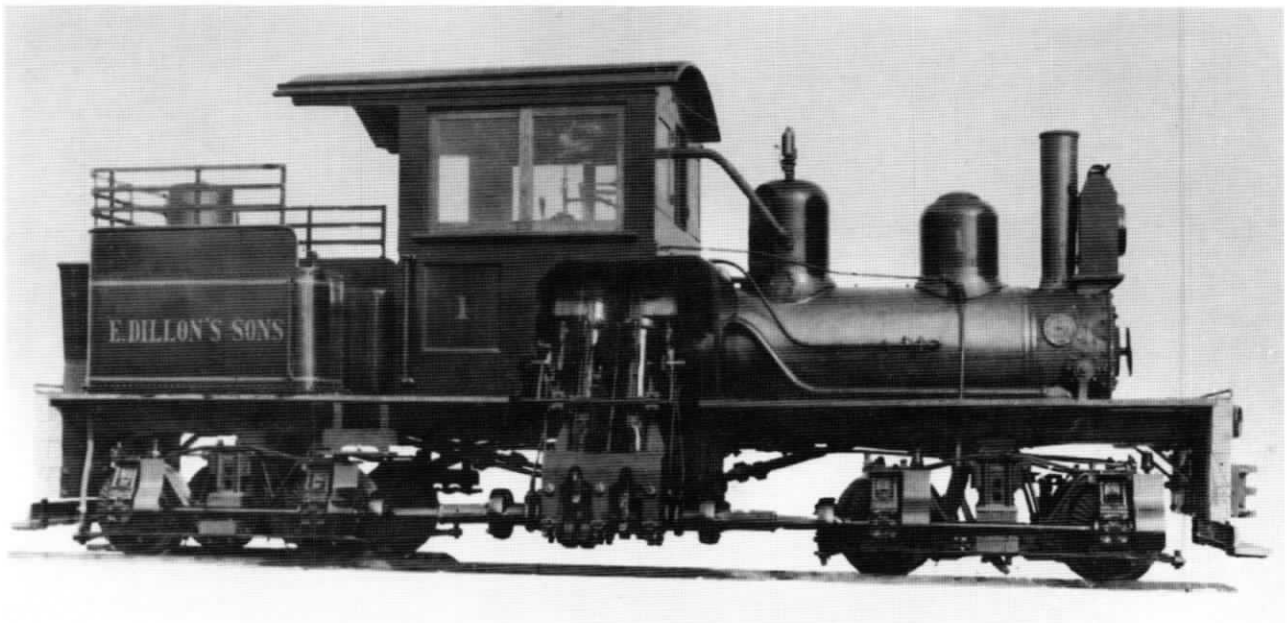
The first batch of paper that the DCIs are printed on is dated 11 April 1899. There is a location for cylinders, cylinder barrel and cylinder frame. The single piece cylinders have an entry in the cylinders column, and the 3-piece cylinders have entries in the cylinder barrel and cylinder frame columns. The first engine that I spotted with a 3-piece cylinder is S/N 677 shipped on 16 November 1901 with 3-14.5x12 cylinders. The first 3-17x18 engine S/N 785 and the first 3-13.5x15 engine S/N 909 were made with a three-piece cylinder. Other sizes of engines 12x12 and larger also started to be made in more than one piece.

The crankshaft bracket supports all the crank bearing boxes. This includes the one for each cylinder and the one that is between cylinder #1 and #2 that was part of the bottom bracket. For the engines that were already being made with 3 pieces, the same cylinder frame and cylinder barrel castings were used with the new crankshaft bracket.

The print for the first one-piece crankshaft bracket left the draftsman's table on 05/04/1905. This new bracket can be seen in the photo of S/N 1553. This Shay with a newly designed 2-6x10 engine was completed on 9/16/1905. The cylinder barrel and the frame of this engine was a single casting, bolted to the crankshaft bracket.

The patent for the crankshaft bracket showing a three cylinder version was filed on 08/23/1907. Patent # 879,617 states that the preferred name for this bracket is crankshaft bracket. Researchers please take note that the drawing card index does not have a box for this term and so drawing and casting numbers are listed in the old bottom bracket location. This is made a bit more confusing because the bottom bracket is sometimes called the lower bracket on the drawings.

Future articles in this series will include drawings of the four main classes of Shays. The next issue will be a drawing from the mutt file - S/N 517.



Shop Number 1553 Photo courtesy Allen County (Ohio) Historical Society

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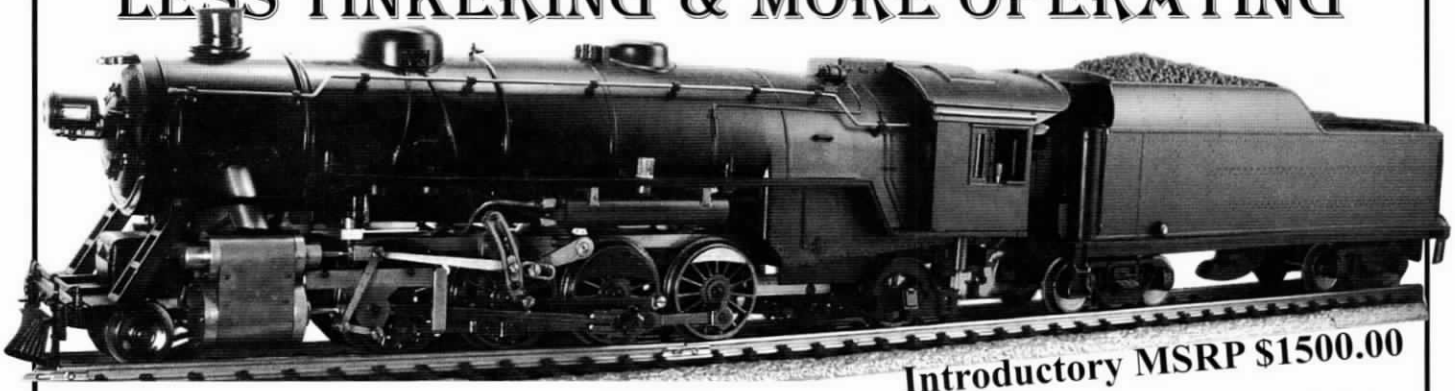

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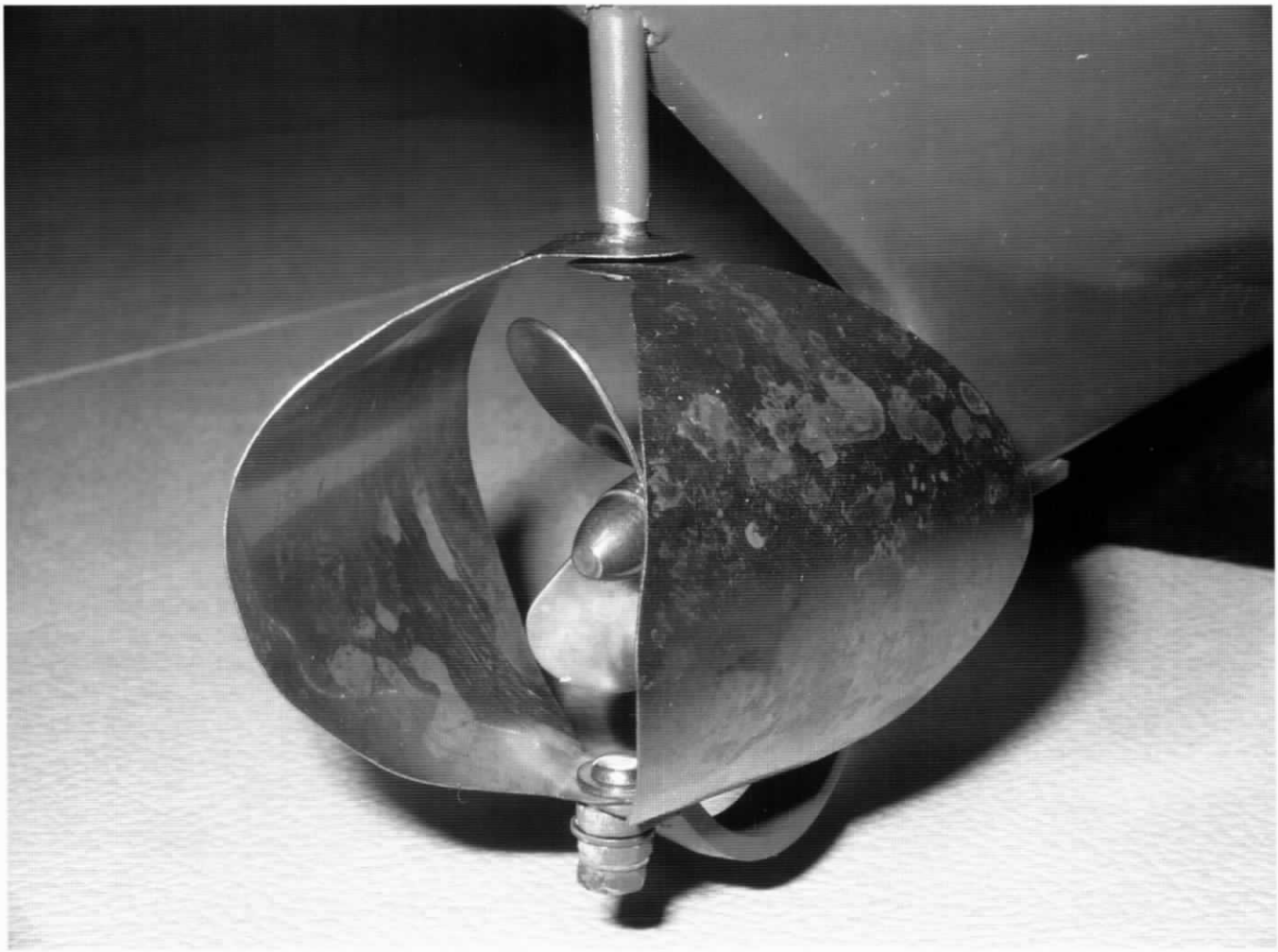
A Kitchener Rudder for the Midwest Elliot Bay Steam Launch

by Elliot Kaplan

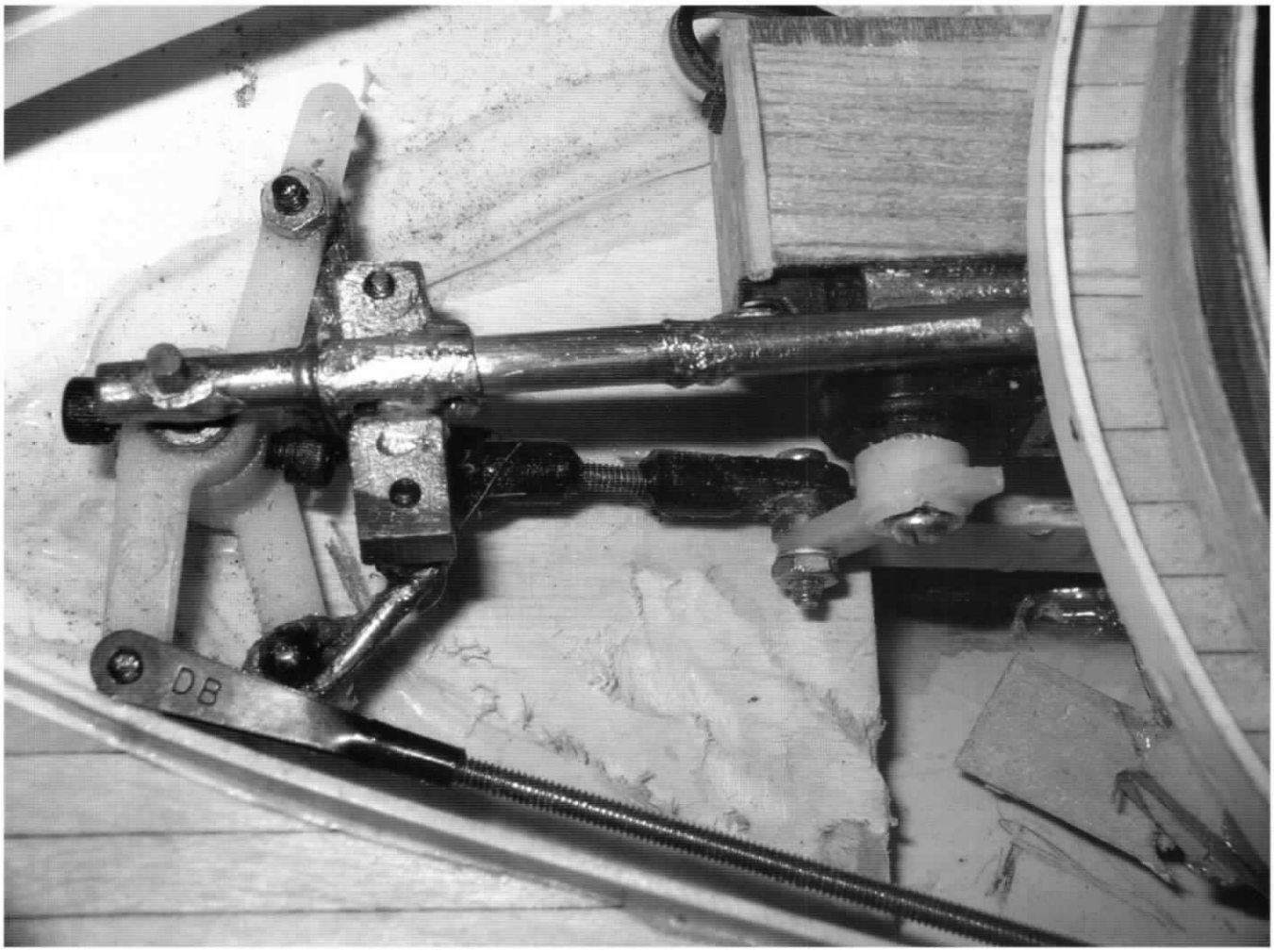
From the moment I first saw the Midwest Elliot Bay Steam Launch I knew exactly what I wanted to do to modify it. Of course the kit as engineered by Midwest is designed to be an easily built and easily operated model steamboat. Built as directed results in a terrific introduction to the model steam boating hobby whether you are a novice or experienced model builder.

The Heritage power plant specified for this kit includes a pre-soldered boiler and a completely assembled single cylinder oscillating steam engine. Anyone familiar with this type of engine will know that they are not reversible and you really cannot control the speed by reduction of steam pressure without the danger of the engine stopping.

One of my main goals was to provide for both speed control as well as the ability to reverse the model. How to do that? The answer was to use a Kitchen Rudder. Ah, what's that you ask? Well, that was an invention by a man named Kitchen in the early



Closeup view of the Kitchener Rudder installed on the Midwest Elliot Bay Steam Launch.



Ingenious mechanism that controls the Kitchener Rudder.

part of the 20th century to solve just such a need. Basically the Kitchen Rudder, from a steering point of view, works like a steerable Kort nozzle. It directs the prop wash in whatever direction the two vanes of the rudder are pointing. What makes the Kitchen Rudder unique is that the two vanes or sides of the rudder are separately linked by control arms so that they can be closed down towards one another on the stern side. As the vanes close the prop wash starts to bounce off the vanes and the boat loses power in the forward direction. With the vanes completely closed, the prop wash bounces off the vanes and is directed towards the bow. This results in the boat going in reverse. Since the mechanism to turn the vanes together remains, the boat can also be steered while going in reverse.

The key to making this project a success was to be able to get the mechanism for the Kitchen Rudder into the limited space at the stern of the Elliott Bay. Two servos are required. One servo provides for steering by moving a tiller arm. This tiller arm is connected to a shuttle, which in turn is connected to two control arms which control the opening and closing of the vanes. The servo for vane control is mounted on the tiller arm so when controlling the boats direction, the entire tiller arm, shuttle, and shuttle servo move.

For the shuttle arm vane control I had to use household solid copper wire wrapped around ball links studs due to limited space for normal ball links. A high torque ball bearing servo was used to insure enough energy to operate the shuttle that controls the opening and closing of the vanes. I also decided to install a 6 volt NIMH battery to run the receiver and servos, primarily to get a little extra power for the shuttle servo to overcome some mechanical friction in the shuttle mechanism.

If you look at the enclosed pictures you can get a good idea how the Kitchen Rudder operates. One of my fears was that when the vanes were completely closed the prop wash would result in the engine stalling due to its limited power output. The first time I tested the model in the water I very slowly closed the

vanes and to my delight the operation was flawless. I have since run the model many times and the engine has never stalled when closing the vanes.

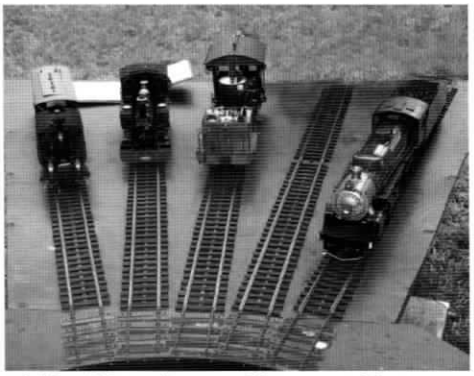
In addition to the Kitchen Rudder, other modifications to the stock model include opening up the stern deck and creating a removable hatch, both to install the rudder mechanism and for maintenance. I also made the rear seat removable for the same reason.

The model plan calls for the exhaust steam to be piped out one side of the model, but I found this idea unacceptable. Instead I made a small brass condensate tank and then piped the remaining steam up a separate pipe attached to the bands around the boiler. I also made a displacement lubricator to improve the efficiency of the engine, and a brass tray for the engine and boiler to catch the inevitable water leaking from the engine.

For the sake of improving the looks of the model I added Northeastern pre-made decking and painted all of the deck fittings with gold spray paint.

The end result of the above effort is a simple model transformed into something a little more pleasing to the eye and with much improved operational characteristics.

If you have any questions concerning my efforts please feel free to email me at ekaplan@sprynet.com.



Mike Moore's portable turntable, seen here attached to Jim Stapleton's track, is usually filled with a variety of steam locos.

photo by Peter Martin

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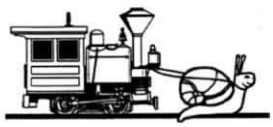

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--------- Exclusive US importer and distributor for Aster live steam locomotives and accessories ----------

If your passion demands 1/32 scale live steam models of highest precision, aesthetic presentation and prototypical functionality, look no further than Aster. All locomotives are designed and manufactured by Aster hobby Co. Inc. of Yokohama Japan.

NICKEL PLATE ROAD 779

Scenes like this will soon become reality on many Gauge One llayouts. The first Berkshire kits are expected to be released from the Aster factory by late October. If you have not already made your reservation, don't hesitate any longer and miss out on this superb Aster live steam model.

The NKP Berkshire #799 will be produced as live steam, alcohol fired model only. (No electric version)

Above action picture features the pre-production prototype, subject to minor changes. Photo courtesy R. Schlabach

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For availability and prices contact your authorized Aster dealer. Check www.asterhobbyusa.com for additional pictures and technical specifications.