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STEAM IN THE GARDEN

with Steam on the Pond

Vol. 12, Nº 5

Issue Nº 65

Articles

Departments

FRONT COVER:

A strangely caricaturish passenger train clatters through the wilderness on Carl Malone's line in Texas. It may not look like a scale model of an existing prototype, but it really is. Honest! I'm not making this up! Check out Carl's review of Rishon Locomotives' diminutive steamer in this issue.

photo by Carl Malone

Publisher/Editor
Ron Brown

Faithful Assistant & Staff Photographer
Marie Brown

CAD & Other Drawings in This Issue

• Les Knoll •

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

2002 CALENDAR OF EVENTS

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

June 27-29, 2002 - Steam Logging 2002, the 8th Annual Northwest Logging Modelers Convention takes place at the Best Western Cotton Tree Inn, 2401 Riverside Drive, Mount Vernon, Washington. Modeling, technical and historic clinics, logging model contest, swap meet and dealer sales, local railfan activities. Standard fare, $30, other activities extra. Contact NWLMC, 336 7th Ave. N, Algona WA 98001-7436 • www.nwlm.org

July 4, 2002 - Independence Day Run, Manatee Central RR & Family Lines. Parrish, Florida. 35 miles south of Tampa, 20 minutes south of Sarasota. Privately owned. 9000' of 7.5" gauge track; 1200' of 4.75" gauge track; portable 3.5" gauge track; Gauge 1 loop in sheltered, wooded area. Pond for boats. Visitors welcome, please call first. Larry & Joan Smith, 9111 Erie Lane, Parrish FL 34219-9049 - (941) 776-2109.

July 11, 12, 13, and 14, 2002 - 29th Annual Tuckahoe Steam and Gas Show, located in Talbot County on Maryland's Eastern Shore, five miles north of Easton between mileposts 57 and 58 on Route 50. Lots to see and do for the whole family. Mike Moore's portable Gauge 1/Gauge 0 track will be set up and operating, so bring your steamers and trains. For information call 410-822-9868 or e-mail: info@tuckahoesteam.org The web site URL is: http://www.tuckahoesteam.org/

July 12-14, 2002 - National Summer Steamup, Pleasanton, California. The event will be held at the Pleasanton Hilton Hotel, just off Interstate 580 in the San Francisco East Bay and it will feature the PCLS dual-gauge 32mm/45mm track that debuted last year at Sacramento's National Summer Steamup. Also expect other 45mm and 32mm live steam tracks for wall-to-wall live steam. In addition, the event will feature clinics on small-scale live steam techniques, a dealer room as well as raffles and other entertainment. Join live steamers from around the world to enjoy 45mm (Gauge One) and 32mm (Gauge O) tracks in abundance amid the unbeatable climate and surroundings of Northern California. The Bay Area is unequaled for easy access, exciting atmosphere and predictably great weather. Feel free to contact steamup@summersteamup.com for more information.

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

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

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

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

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

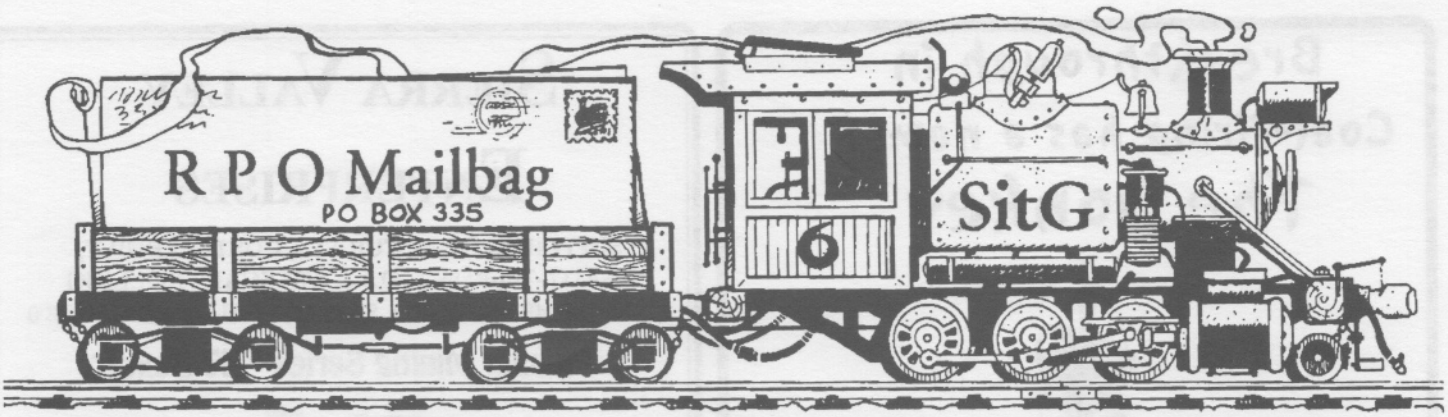
Because of publication lead time, please send info for Calendar of Events well in advance. Include name of host and location of event, with address and/or phone number to contact for complete information. Some basic info about the site is also useful (i.e., ground level or elevated, minimum curve radius,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

HELP WANTED!

We're running low on articles, steamup reports, loco and product reviews, photos, etc. So...we're turning to our readers for assistance. You have always been generous in your response to our requests for publishable materials with a focus on gauge 1 live steamers.

This is YOUR magazine, and YOUR forum for exchange of ideas and information, so send 'em in.

Got questions? The combined experience of our readers is the best in the world, so go ahead and ask.



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.

* * * * * *

Swarthmore, Pennsylvania
via e-mail

Dear Ron

In SitG #60 John Thomson described the building of a scale speed and distance indicator. Having got my Aster Mogul out again after about a year's hibernation I realised such a thing would help me know when the engine should get more water, so I built one and put it into a gauge 1 eight-wheel gondola, rather than a four-wheel flat car as John had done.

The only inexpensive bicycle speedometer I could find was at K-Mart...they now sell the 'Bell' brand. The sensor is simply a magnetic reed switch and I trimmed off all but the immediate plastic housing. What is left is then sufficiently compact to be fitted under the cross member of the truck.

The supplied magnet is in a large plastic housing and all of this I cut away except the backing of the magnet. I left the backing on because the gondola had plastic wheels and I used vinyl cement to bond the magnet to the inside face of one wheel, making sure it would not foul frogs and guide rails. I thought of fitting a balance weight too, but it doesn't seem neccessary. Later I changed to steel wheels and removed the plastic backing.

A clip was made to secure the sensor unobtrusively to the cross member of the truck so it detected the passing of the magnet on each rotation. The axle was shimmed to limit axial float to a minimum.

The display head, fortunately coloured black, I set into the dummy coal load in the gondola simply by pushing it into a cutout in the foam base of the load. The whole job, including the thinking, took less than an hour.

A disadvantage of the 'Bell' unit is that the two programming buttons are on the back and not easily accessible. Left in the 'scan' mode, it displays in sequence each function every ten seconds while showing speed all the time. The mode I prefer for general continuous running displays just speed and trip distance.The unit's programme accepts up to a 2999mm wheel circumference (37.5" diameter) and the scale factor is figured as John showed in his article.

Given what I have learned from my short operating experience with the device I would recommend looking for a display that has the programming buttons on the front.

The 'Bell' device is designed to read typical bicycle speeds, and I found that it under-indicated distance (and presumably speed) when run above about 60mph. Presuming this to be due to the reed switch failing to operate fast enough, I halved the width of the magnet so that the switch spent less time under its influence each revolution. This raised the reliable response to just over 90mph. To read accurately any faster than this it would be neccessary to go to say a cam operated micro switch or Hall Effect device.

For a $15 outlay, John's idea will save me the counting of many laps and I probably won't modify it any further. I do intend to build a sensor into a 4-wheel gauge 0 wagon and use the same readout head with it.

Murray Wilson

* * * * * *

Nashville, Tennessee
via e-mail

Dear Ron,

In his article on radiant burners in Issue #63, Kevin O'Connor dismisses the fitting of cross tubes as unneccessary when one installs a radiant burner. This may be the case if one focuses solely on the needs of the burner, but declaring they are of no use because my burners don't need them fails to take into consideration what other desireable benefits cross tubes might have besides scavenging heat. One of these would be the promotion of vigorous water circulation within the boiler. I would hate to throw a perfectly good baby out with the bathwater.

Harry Wade

* * * * * *

Wiltshire, England

Good morning Ron,

I was pleased to see that Rick Runyon was remembered by Sonny Wizelman in issue 63.

Rick was a very popular and frequent visitor on this side of the pond. Every hobby needs 'larger than life' characters, and most certainly, Rick fitted the bill entirely. I first met him and his lovely wife, Kay, at the first Diamondhead that I attended, I think it was 1995. He came bowling along the passageway, stood in front of our booth and started firing questions at me so fast that my answers could not catch

up. "How much is that? How many do you have with you? Are you sure it's 1/32 scale? Geee, these are nice, do you make these yourself? Can I pay cash and plastic? OK, here's the deal....."

At about this time, he spotted Kay coming towards us. "Quick", he whispered out of the comer of his mouth, "talk about the weather. You Brits are good at that, OK?" The following is a fair representation of what took place.

Kay: Hi, so what are you up to?
Rick: Just lookin'.
Kay: Don't look too closely.
Me : (sheepishly) . .nice to hear a British accent, Rick and I were just discussing the weather.
Kay : Bullshit... (looking at Rick) You've got far too much already, you'll need to sell something before you buy anything else.
Rick: (out of the corner of his mouth but quietly). . .I could always sell you.
Kay: You wouldn't last ten minutes, Buster.
Rick: (Looking at Kay) So how many pieces can I get then....'?
Kay : I give up, I'll see you later (and then she walked away into the other part of the hall)
Rick: (to me) Hang on there, I'll be straight back.

Rick rushed after Kay, caught up with her, they locked in a very public embrace and small talk passed between them. He finally strolled back over to our booth.

Rick: OK, I've got my limit, where were we?
Me: I'm confused.. You tell me!

I got to know Rick and Kay over the ensuing years, and a more truly devoted and loving couple would be hard to imagine. They were the perfect foil for each other and very supportive. There is an apochryphal story that Rick's Mastercard was stolen but Kay did not report it the police because the thief was spending less than Rick was!

Rick had built up a legend about himself that he never spent money, and when he did produce currency of any kind, it was a cause for celebration bordering on riot. I attach a rather poor print taken from a photo file from one of the Diamondhead meetings. It was absolutely coincidental that Carol Jobusch just happened to be there as Rick offered a cheque to us and we even had witnesses (with myself is Jim Stapleton and the accusing finger of Wayne Colleran). Looking at Rick's face, I think that he did not mind denting the legend just that once!)

Rick was a frequent visitor over here and he and Kay had a nice apartment in Windsor, just below the castle walls. He was also a frequent visitor to the British Aerospace Centre at Filton, Bristol where he had several flights in the Concorde simulator. On the way there, he would invariably make a diversion off the M4 motorway and come down to see us in Marlborough. Usually, running behind his own self imposed schedule, his visits could last anywhere from 30 seconds to 30 minutes. He packed so much into his life. As a pilot, I know that he was extremely conscientious and very conservative. It is still hard to believe that he was killed during a takeoff, an action he must have accomplished hundreds of times before. I will remember Rick, not only as a good friend and customer but also as a helpful, cooperative and enthusiastic Gauge

Oner. He was instrumental in gathering most of the data needed for us to start the development of our SP Harriman cars, something he said he wouid do and he did it.

Rick will be sorely missed by many people for a myriad of reasons - for my part, I will remember him for his infectious laugh, his boyish enthusiasm, his unpredictability, his devotion to Kay, but above all, I will remember him as a decent chap.

Neil Rose

* * * * * *

via e-mail

Dear Ron,

Since I converted my C-16 to R/C, as described in the article (concludes in this issue), I have heard from a couple of folks that Accucraft have changed the tender on the #268/278.

My #42 comes apart with 4 bolts, as described, and I checked with Noel Crawford that his #268 was the same. However, the newer versions are different - the rear chamber behind the coal area (where the butane tank is located) is enclosed with a bottom plate that is soldered to the tank.

There appears to be no easy way to dismantle the tender and gain access. Two different solutions have been reported: cut a hole in the back, or use part of the coal area.

Clem O'Jevitch reports that he cut a hole in the plate to gain access to the area in the back of the tender. He mounted the on/off switch in the top, under the water hatch. After that, his solution is similar to mine.

Arthur Cohen took a different approach. He used the open area where coal would normally sit, and partitioned it. (Note: if you hadn't noticed, the 'coal' area is designed to hold water around the gas tank. That keeps your butane at a more stable temperature so it flows more easily. It is also a place to mount a hand-operated water pump, though I haven't heard of anyone doing so...yet.) His recevier and batteries are easier to reach, but it was a lot more work.

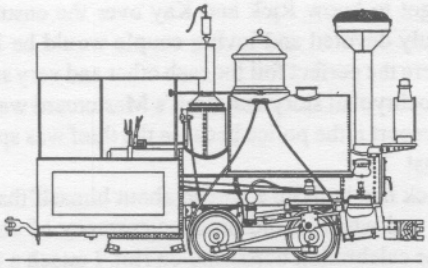
Arthur reports: "It was a real job, too, as far as the tender went. I decided not to tear the tender all apart to get to that enclosed chamber that was soldered closed at the rear of the tender.

"What I did was open up the 2 holes that are under the little manhole cover on the top of the rear of the tender. This was to be able to pass the connectors of the Futaba switch through them. Then, just below the top of the vertical manhole cover's oval tube/support I drilled 2 holes and machined a slot to accept the on/off switch. To do this was quite a job because the holes and slot's center height, over the tender's cover, was lower than the raised edge or wall (I'm forgetting my English) that extends above the tender's cover. What I did was machine a drill guide with sloping perforations to drill the holes for the 2 screws and the slot for the switch's toggle clearing the upper part of the tender's rear wall. This way I didn't damage the paint or sheet metal of the tender. Mounting the switch here was unobtrusive and also allowed that the little cover could be closed on top of it without the switch interfering.

"I then drilled a 1" hole in the back vertical wall below the tender's top cover, behind where the fuel tank is mounted in the coal (water storage) area. I put a grommet there so that the wires going through the hole wouldn't be abraded. I ran the 3 cables from the switch through that middle wall. I then made and installed a brass wall that got mounted just behind the butane tank. This left me enough dry space/area to place the receiver and batteries. I drilled two 1/16" holes through the floor in this area that allows me to pass the servo's cables under and to the front of the tender without being seen.

"The wall I made was fastened in place with six 2-56 bolts. It was made out of #28 (about) brass sheet with 3/8" angles I made that were soldered to its bottom and 2 sides. After securing the wall with the screws I sealed the union with ordinary yellow enamel paint. It took 3 to 4 paintings to flow in and fill the joints to be water tight. Silicon is too messy. All this was about 20 hours work."

Submitted by
Peter Thornton



WHAT'S NEW?

Midwest Products Co., Inc.;, 400 S. Indiana St., Hobart IN 46342 • phone (800) 348-3497 • web site www.midwestproducts.com, is pleased to announce the release of their **Easy Cutter Pro.** The Easy Cutter Pro is designed to cut a variety of materials, including Balsa, Hardwoods, Dowels and most plastics. Plus, the Easy Cutter Pro includes 3 adapters for cutting cordage, hose and rubber quickly and easily. Visit your favorite craft or hobby supplier for the Easy Cutter Pro, or visit their web site.

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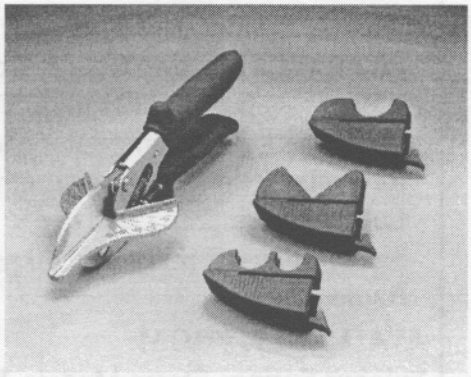

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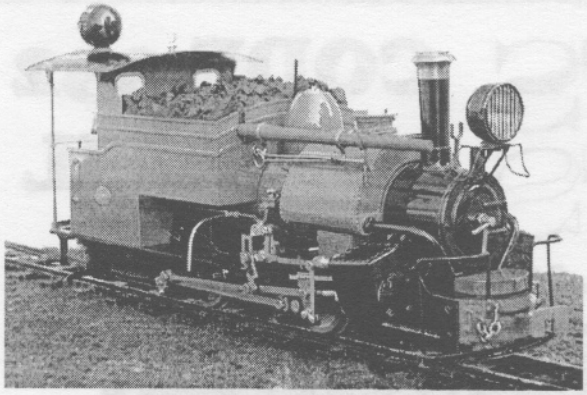
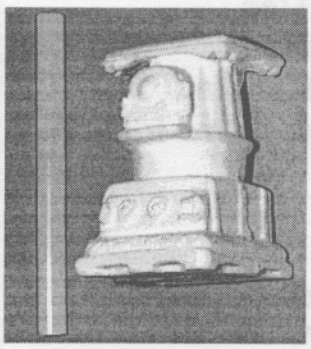


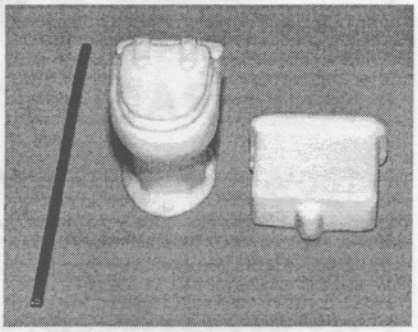
Roundhouse Darjeeling

Roundhouse Engineering Co. Ltd. (see their ad in this issue for contact information) is celebrating 20 years as a manufacturer of quality live steam locomotives. They introduced their latest live steam locomotive, the Darjeeling, in April. It is in production and is now being shipped. The response to this loco, Roundhouse's most highly detailed locomotive, has been so overwhelming that they are sold out through November 2002. Contact your favorite Roundhouse dealer for more information, or to place your order.

Trackside Details, 1331 Avalon Street, San Luis Obispo CA 93405, announces the release of the latest items in cast styrene by Carlo Spirito. The **Toilet Bowl & Water Tank** and the **Caboose Stove, Estate Style** are both cast in 1:20 scale.



They can be used in Caboose/Camp Cars, Passenger Coaches, lineside structures, or just let your imagination run wild. Pete Thorp notes that when used in a caboose, the potty was often installed without a tank, with only a minor adjustment of the floorboards directly underneath. Trackwalkers beware! The samples we received of both items are nicely detailed, and require very little, if any, filing, sanding or filling.



Steam Motor № 1
The "Coffee Pot"
by Rishon Locomotive Works

review and photos (except as noted) by Carl Malone

Specifications

Gauge:	45mm or 32mm
Scale:	1/20.3
Dimensions:	Locomotive - LOA 7 3/4 " • W 4 3/4" • H 6 1/2" • Weight 4 1/4 lbs.
	Carriage - LOA 18 " • W 5" • H 6 1/2" • Weight 3 3/4 lbs.
Fuel:	Butane
Cylinders:	Two, fixed and double acting
Fittings:	Pressure Gauge, Goodall type valve, Safety/filler plug, Throttle, Electronic water gauge
Reversing gear:	Slip-eccentric
Lubricator:	Dead leg
Safety blow-off pressure:	40 psi
Available from:	Rishon Locomotives, 8 Ewandale Cl., Clunes NSW, Australia 2480 Tel: 61266291115 • e-mail: rishon@dingoblue.net.au
USA Representative:	Sulphur Springs Steam Models, PO Box 178, St. Peters, MO 63376-3401 Tel/Fax 636-272-6632 ● e-mail: sales@sssmodels.com

Several years ago I received a postcard from my friend Joe Dempsey in Australia. It pictured an interesting little locomotive that had an almost whimsical appearance. I had never before seen this locomotive, but immediately I fell in love with its charm. I was so impressed with it that I inquired if anyone thought it would be possible to model it in live steam. The general consensus was that the boiler was too small and there was not enough room to effectively model the running gear. So, I put this idea aside for awhile and didn't give it much more thought.

January of 2001 brought my annual pilgrimage to Diamondhead, Mississippi, and much to my surprise, Rishon Locomotive Works showed up with a prototype model for the very same lovely locomotive! Of course, I had to place an order for one on the spot.

History

The prototype Steam Motor № 1 was built in England in 1905 and shipped to Australia for service. From 1906 to 1932 it was based at the Quorn Depot and was mainly used on a weekly service between Quorn and Hawker, in addition to being hired by school, church and sporting groups often traveling to Port Augusta. Later in 1921, it was transferred to the Commonwealth Railways and it was there that it acquired the nickname **"Coffee Pot".**

Today, the "Coffee Pot", having been fully restored in 1975, is part of the Pichi Richi Railway Preservation Society and is available for private charter for birthdays or other special occasions.

Steam Motor Nº 1 in 1906, shortly after it was delivered. Note that the cowcatcher had not yet been added. (photo used by permission of Railmac Publications)

The prototype, weighing in at 21 tons, is 39' 11-1/2" in length and was built to a gauge of 3' 6" with 28-1/2 " drivers. Its passenger capacity is 9 in First Class and 13 in Second Class.

The Arrival

After several months waiting for delivery, the locomotive arrived in my office and I performed the ritual of the "new locomotive dance", much to the chagrin of those in visual range.

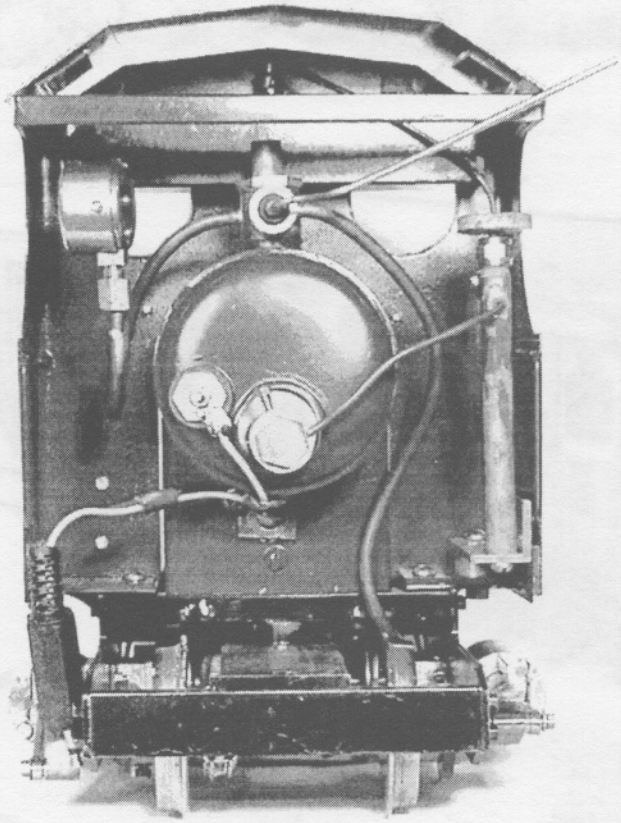
After hurriedly unpacking the box, I immediately noticed the fine craftsmanship in the model. The tiny locomotive unit is completely self-contained, making it possible to operate without the passenger section. The passenger carriage is connected to the business end via a gooseneck arrangement, much like a tractor trailer, and thus allows the whole unit to articulate.

Varnished wood adorns the passenger carriage, which is attached to a steel framework. The wooden seats are visible through ABS plastic windows with all this being covered with a detachable sheet metal roof. It would be possible for the modeller to super detail the interior with the addition of lighting, passengers, etc.

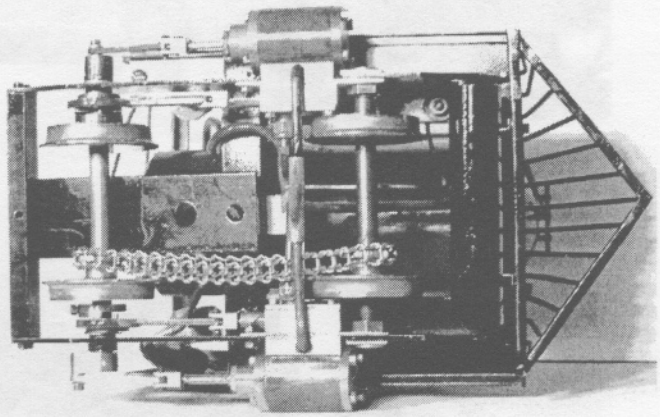
A novel feature of Rishon locomotives is the use of an electronic water level gauge. This consists of a probe in the backhead of the boiler magically connected to a red LED on the front of the carriage section. The electronics transforming this into reality are contained in the carriage and powered by a 9 volt battery holder in the water tank under the frame. The sensor in the boiler is connected to the carriage via a mini jack that plugs into the coach. When the water in the boiler reaches a predetermined level, the LED will blink, signaling a dry boiler. I'm not aware of any commercially available locomotives with an 'electronic sightglass', but this seems like a good alternative to the more traditional water level gauge. It has worked very reliably every time I have run the locomotive.

Looking under the frame (under.jpg) one can see the compact arrangement of the cylinders and the slip eccentric valve gear. I have come to really enjoy the simplicity and reliability of slip eccentrics. The rear drivers are connected to the front drivers via a ladder chain drive. A very effective transfer of energy in this tight space!

The backhead (back.jpg) is also neatly laid out for easy access. Here one can see the sensor entering the boiler for the low water indicator and the banjo fitting containing the regulator and Goodall-type valve. The butane tank is situated above the boiler for additional heat to keep pressure as fuel is used.



Coffee Pot loco backhead.



Bottom view, showing the ladder chain drive between axles.

Steaming up

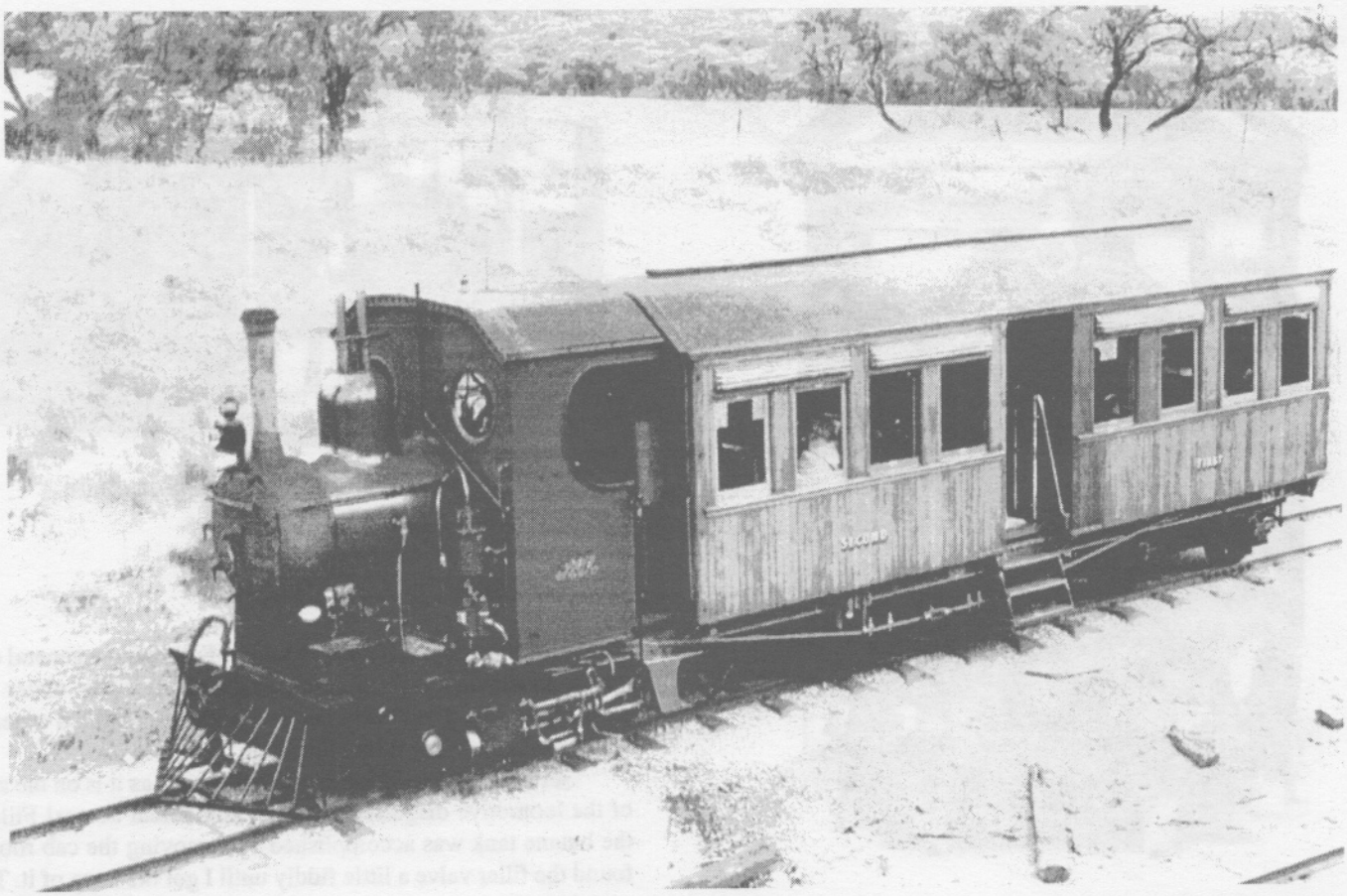
This locomotive is a joy to steam. Following a general oiling of all moving parts, I removed the safety valve under the steam dome and filled the boiler with 150ml of distilled water or about 1/4" below the filling bushing.

Servicing the dead leg lubricator is easy as it is on the side of the loomotive disguised as a tool box. Great access! Filling the butane tank was accomplished by removing the cab roof. I found the filler valve a little fiddly until I got the hang of it. The trick is to slightly open the gas regulator while fueling.

Lighting off is done by cracking the gas valve and holding a flame under the boiler. At first, I attempted lighting from the top of the stack, but it is too small in diameter to draw the flame down...after repeatedly trying this, I read the instructions. It will

The author's loco clatters around a curve on his ground level line in Texas.

Passing by a home in the country on the daily commuter run.



1:20.3 or 1 inch = 1 foot? Hard to tell in this postcard photo! (used by permission of Rail Mac Publications)

light off every time using proper technique by holding the flame under the smokebox.

Working steam pressure is obtained in about 4-5 minutes and it's ready to go. This is a slip eccentric loco so it is necessary to rotate the wheels through one revolution to set the valve gear in the proper running direction. It's interesting that when I was new to steam, I thought every locomotive should have fully working valve gear and radio control. I still like these features but simplicity has its rewards in reliability and performance.

Once the condensate was cleared from the cylinders, I opened the throttle and it rolled away quite smoothly. There was really no noticable stack talk until it traveled 5 or 6 feet. At this point, it spat out a little water and there was a distinctive chuff. The speed was easily controlled from a handle that extends up behind the roof.

I believe radio control could easily be added to the steam regulator if desired, although there are no parts for this included from the manufacturer.

Running on an elevated track, I was able to adjust the Coffee Pot for a nice sedate pace around the track. My initial run lasted about 15 minutes and I needed to adjust the gas flow a couple of times to turn it down as the tank heated up. The running time has improved quite a bit as I have become more experienced with the gas valve.

The low water level indicator started blinking, signaling the need to add more water via a Goodall-type valve in the cab. This extended the run a few more minutes until the gas ran out. Although the tank is a little more difficult to fill when hot, it is possible to keep this engine in steam for extended periods.

Final Thoughts

After the run it's time to let the engine cool and wipe things down...also known as bonding time. This little locomotive is, all in all, quite satisfying to run and is very well made. Rishon Locomotive Works have another winner to add to their fine stable of locomotives.

Railmac Publications has kindly given permission to use the two postcard photos used in this review to show what the real Steam Motor Nº 1 looked like, then and now. These photos are reproduced on postcards, and are available, along with many others, from Railmac Publications, 8 Walditch St, Elizabeth Downs, 5113 South Australia, Australia • phone 011 61 8 8255 9446

A Beginners Guide to Small Scale Live Steaming

by Chuck Walters

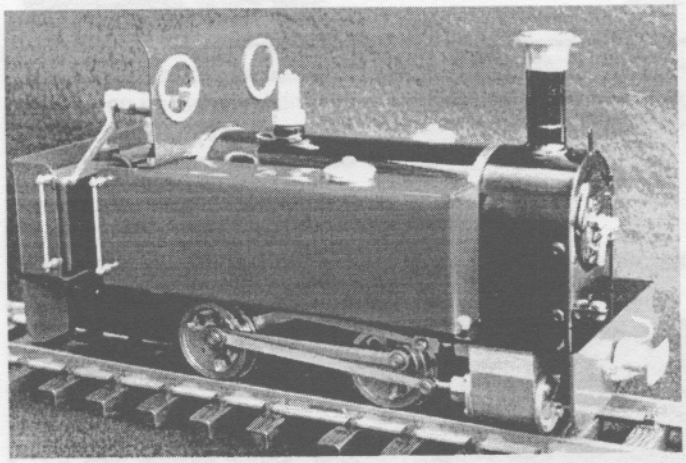
(Engine Photos used with manufacturer's permission)

Choosing an Entry Level (First) Engine

Just as a carpenter needs a good quality saw to cut wood, an artist needs a well made paint brush to paint pictures and a doctor needs an accurate sphygmomanometer (say that three times fast) to take your blood pressure, you need a quality made and reliable engine to enjoy the hobby of small scale live steaming.

Why, you may ask, can't I just buy the engine that looks good to me? Because there is nothing more disheartening than investing money into something only to find out it does not work as expected, or is more complex than you thought it would be, or won't run in your garden because your curve radius is not big enough. This can be very frustrating and often leads people to give up. It can leave a bad taste in their mouths and a sizeable hole in their wallets.

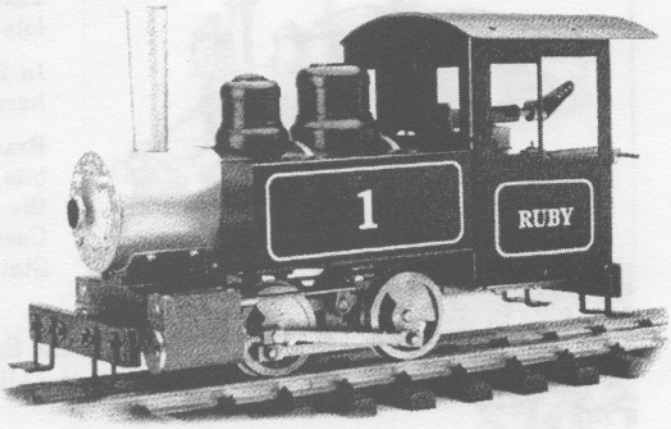
The aim of this article is not to suggest any one engine is better than any other, but rather to present a set of criteria that you should think about when buying your first live steam engine. Reference to a specific live steam engine will be made simply to let the reader know what is available, and to give examples of costs and features.



Roundhouse's MILLIE

Included at the end of this article is a list of manufacturers that make engines that fit into what I call 'entry level engines'. Many have web sites and e-mail and would be very happy to answer any questions you may have.

Below is a list of the factors you should consider when choosing your first engine. We will look at each aspect individually, and no one factor is more important than any other so they will be presented in random order.



Accucraft's RUBY

- Cost
- Engine accessories
- Appearance (scale model versus free-lance)
- Track radius and grade the engine will run on
- Type of fuel used (butane, alcohol, coal or pellet)
- Maintenance
- Manual running versus radio control

Cost

There are two ways to think about this. While it would be nice if cost never had to play a part in buying anything, the reality of the situation for most of us is, that money does drive our decisions. Gauge 1 live steam engines can range in price from $300 to in excess of $20,000. Most entry-level gauge 1 engines will be less than $800 in price. This means you can get started in the live-steam hobby for about the same cost as one good electric large-scale engine.

A good rule of thumb I have used when helping beginners get started in the hobby is to set up a budget for the engine itself, plus some needed accessories to get started with and a budget line for ongoing expenses, such as gas, parts and lubricants. After you find out what a fantastic hobby this can be, you can then start saving up for your *next* engine.

Engine Accessories

To start off this section, perhaps a short vocabulary lesson is appropriate. These are terms that you will see, hear and read about when folks discuss live steam engines.

- Safety Valve – An automatic pressure-relieving device attached to the boiler that opens if the pressure gets too high.
- Gas Regulator – A valve that controls the flow (amount) of butane gas to the burner.
- Steam Regulator – A valve that controls the amount of steam released to the steam cylinders.
- Gas Filler Valve – A one-way valve attached to the gas tank that allows you to fill the tank with butane.
- Steam Oil Lubricator – A device that holds steam oil and controls the flow of this oil to the steam cylinders.
- Water gauge – A glass tube attached to the boiler that shows the amount of water remaining in the boiler.
- Water Top-Up Valve (also known as a Goodall Valve) – A one-way valve that allows you to add water to the boiler without losing all of your steam.
- Reversing Lever – A lever that controls the reversing gear, which allows the engine to go backward and forward.
- Pressure Gauge – A gauge that measures the pressure in a boiler, usually in pounds per square inch (psi).
- Radio Control Fittings – A set of parts that allow the owner to install radio controlled servos to an engine to control the speed and direction of the engine.

There are many accessories that can be added to a new live steam engine. Witness the list above. Some of these features are standard and some of them come as optional extras. All of the engines mentioned in this article will come with a safety valve, steam oil lubricator and steam regulator as standard. The reversing lever is standard on most engines mentioned here except the **'Basic Series'** Roundhouse engines. These engines use a basic type of valve gear (slip eccentric), and are controlled by a push in the desired direction of travel to "set" the valve gear.

On all gas (butane) fired engines the gas regulator and gas filler valve are also standard. The I.P. Engineering **Jane** is fired using alcohol, and the flow is controlled by the packing of the wicks.

The rest of the accessories, the radio control fittings, pressure gauge, water to-up valve are accessories that make life nicer, but are not necessary.

Appearance

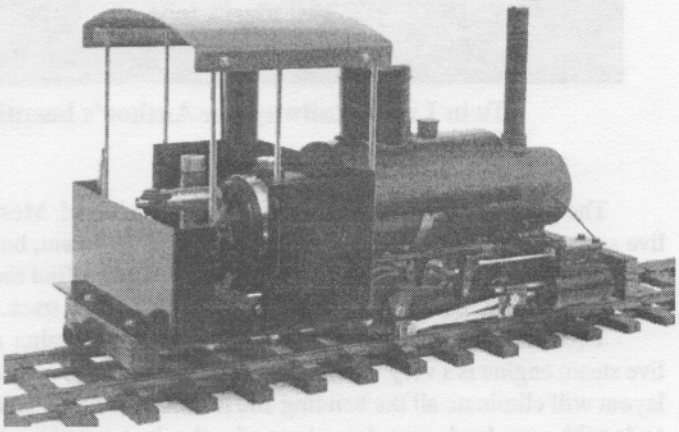
"Beauty is in the eye of the beholder". A great saying that I try to live by. This is where you choose your engine based on what appeals to you, or what fits the railroad era you are modeling. None of the entry-level engines discussed here represent a real prototype engine. They are, rather, a representation of a generic loco that might be found on any railroad anywhere around the world. The scales of these locos will vary, but for the most part they are 1:19 or 1:20 scale.

Some of the engines, such as **Jane** and **Millie** come without a full cab. You have to purchase the rear of the cab unit separately (see photo). These manufacturers also offer other add-on items to dress up your loco such as brass steam domes and brass rings for the top of the stacks. Choose what you like!

Thoughts on Track Radius and Grade

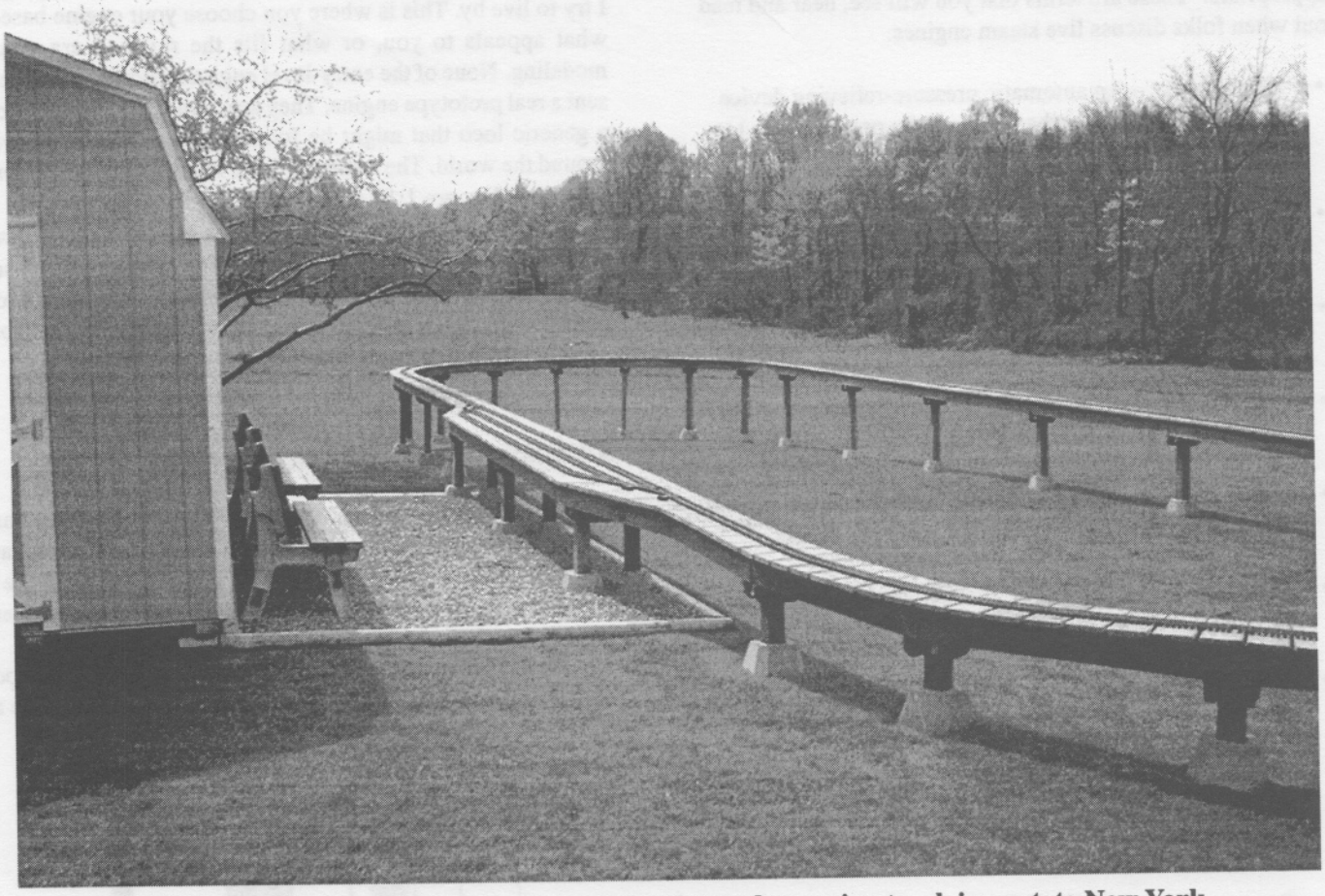
One of the nice things about the entry-level engines mentioned in this article is that they will all run on any 45mm (gauge 1) track made by any manufacturer in any radius. All of the engines mentioned here are also available to run on 32mm (gauge 0) gauge track... except the Accucraft **Ruby**.

Just as in large-scale electric engines, the larger steam powered engines usually require a larger track radius. One rule that seems to work is, "The more fixed drivers that an engine has, the larger the radius it will need to run on without binding". Besides, the larger engines just look better and more prototypical on the bigger curves.



Argyle's Bantam

These entry-level engines all have short wheelbases and can run on small radius curves. You will find that as you move away from the entry-level engines and into the larger engines, such as those made by the Aster company of Japan, you will need much larger curves to run on. This is something to consider when you build your track!



Twin Lakes Railway, the Author's beautiful elevated steaming track in upstate New York.

The grade of the railroad should also be considered. Most live steam engines will climb a grade as steep as 5 percent, but unless the loco is equipped with radio control, you will find the experience much more satisfactory on an elevated, level track.

There is another benefit to an elevated track...running a live steam engine is a very 'hands-on' experience, and the raised layout will eliminate all the bending and kneeling that you have to do with a garden layout, (see photo of author's elevated line).

Type of Fuel Needed for Firing

There are three main types of fuel used in firing a small-scale live steam engine, butane, alcohol (meths) and coal. Coal is generally used by larger gauge one engines and really is for the more experienced live steam enthusiast mainly because it can be somewhat temperamental.

Butane is the most common fuel for the entry-level engines and is the easiest to use. Butane gas can be found in many hunting and camping stores, cigar stores, and even can be purchased by mail order. A can of gas will usually cost about $3.50 for 8 ounces, which will fill a small live steam engine about eight times. Most of the manufacturers warnings supplied with the engines warn against using anything but straight butane or iso-butane and you should always read and follow the manufacturers warnings and directions. However, many live steamers use a mixture of butane and propane in a ratio of 70/30 or 80/20 butane to propane mix. This is mainly due to the fact that straight butane is often harder to find and, as a side benefit, the mixture burns better in colder air temperatures. Please check with the manufacturer before attempting to use something other than what the directions say to use.

When using this type of fuel, the cans of butane often do not mate directly with the gas filler valve on the engine. An adapter may be needed to attach to the gas can to allow filling of the engine. These gas-filling adapters can be purchased directly from Roundhouse Engineering or any of their dealers. Check out their web site or the advertisers in this magazine for further information.

Alcohol fired engines, such as **Jane**, use alcohol, or, as the Europeans call it, meths (methylated spirits, known also as denatured alcohol). This fuel is placed into a holding tank and then gravity fed into a burner. Usually the burner has two or three burner tubes containing wicks. The tubes fill up with alcohol and saturate the wicks allowing them to be ignited. This method is less efficient than gas firing, but is also less expensive. Alcohol burning engines are also much quieter as there is no burner

noise.

Both methods do work and each method is enjoyable in its own right. A fourth method of firing, a chemical tablet that can be ignited, has been left out of this discussion because it is this author's opinion this is the least efficient way to fire a loco and often leads to great frustration.

Maintenance

In a later article, we will cover maintenance of live steam engines more comprehensively, but for purposes of this article the issue will be lightly discussed.

Like any mechanical device manufactured today, live steam engines require attention and maintenance. You do not have to be a mechanical wizard to repair or maintain a live steam engine, but some mechanical knowledge helps. General attention will have to be given to the seals, rings, valves and nuts and bolts. Always make sure the nuts and bolts are tight. While the engine is raising steam, check for steam leaks. If a leak is found, tighten the seals where steam is leaking, following the directions that came with engine. Check O-rings periodically for cracks and replace them if necessary. Try to get an extra gas jet and gas filler valve into your parts kit, because you may need them at any time. Make sure to follow the manufacturers directions for lubricating the engine. If all else fails, there are people available who can help you repair your engine. Contact the manufacturer or your dealer to get the name of an authorized factory repair technician.

Manual versus Radio Control

This is an important consideration, but not as relevant with entry-level engines as it is with more expensive mid-level engines. Of the five engines I consider entry-level, only one, the Cheddar Iver, comes with radio control installed as standard. Radio control will be important if you plan to run your engine on a layout with grades. With radio control gear installed, as you approach a grade you can increase the steam to the cylinders to make it up the grade or decrease the steam to slow down the speed going down grade. Without radio control, you will be constantly bending down to adjust the steam regulator and reversing gear. If you are running on a track with no grade, having radio control will strictly be a matter of preference. Many live steam enthusiasts are hands-on modelers and prefer to be close to the engine making the constant needed adjustments.

Final Thoughts

Of the five small-scale live steam engines mentioned here, the Roundhouse Millie (and it's USA-styled counterpart, Sammie), Cheddar Iver, Accucraft Ruby, I.P. Engineering's Jane and Argyle's Bantam, no one engine is better than the other. They are all great engines for beginners to start out with. The folks that make these engines are always glad to help out with questions, so don't hesitate to give them a call or send them an e-mail.

The live steam branch of large-scale model railroading is a very exciting and fun branch to be involved with. The folks who run live steam engines are top-notch folks and are always willing to talk about the hobby. Get involved, ask questions and see if you can attend a local steam up and see what the hobby is all about.

In the next issue we will discuss the steam up process and the tools you will need to have in your steaming kit.

Manufacturers List

ACCUCRAFT TRAINS
31112 San Clemente Street
Hayward, CA 94544 USA
Tel: (510) 324-3399
Fax: (510) 324-3366
Sales: (702) 395-8724
Order Fax: (702) 395-8722
info@accucraft.com
http://www.accucraft.com/

I.P. ENGINEERING
46 CARISBROOKE CRESCENT
POOLE
DORSET
BH15 4LD
ENGLAND
TELEPHONE / FAX : (01202) 660304
ivan.prior@virgin.net
http://myweb.tiscali.co.uk/ipengineering/

Argyle Locomotive Works
241 Belgrave - Gembrook Rd
Clematis VIC 3782, Australia
Phone / Fax +61 3 5968 6573
ABN 40 545 930 409
argyleloco@fhills.hotkey.net.au
http://www.argyleloco.com.au/

Cheddar Models Ltd.
Sharpham Road, Cheddar
Somerset, BS27 3DR
Tel: (01934) 744634
Fax: (01934) 744733
cheddarmodels@msn.com
http://www.modelsteam.co.uk/

Roundhouse Engineering Co. Ltd.
Units 6-7, Churchill Business Park
Churchill Road
Wheatley
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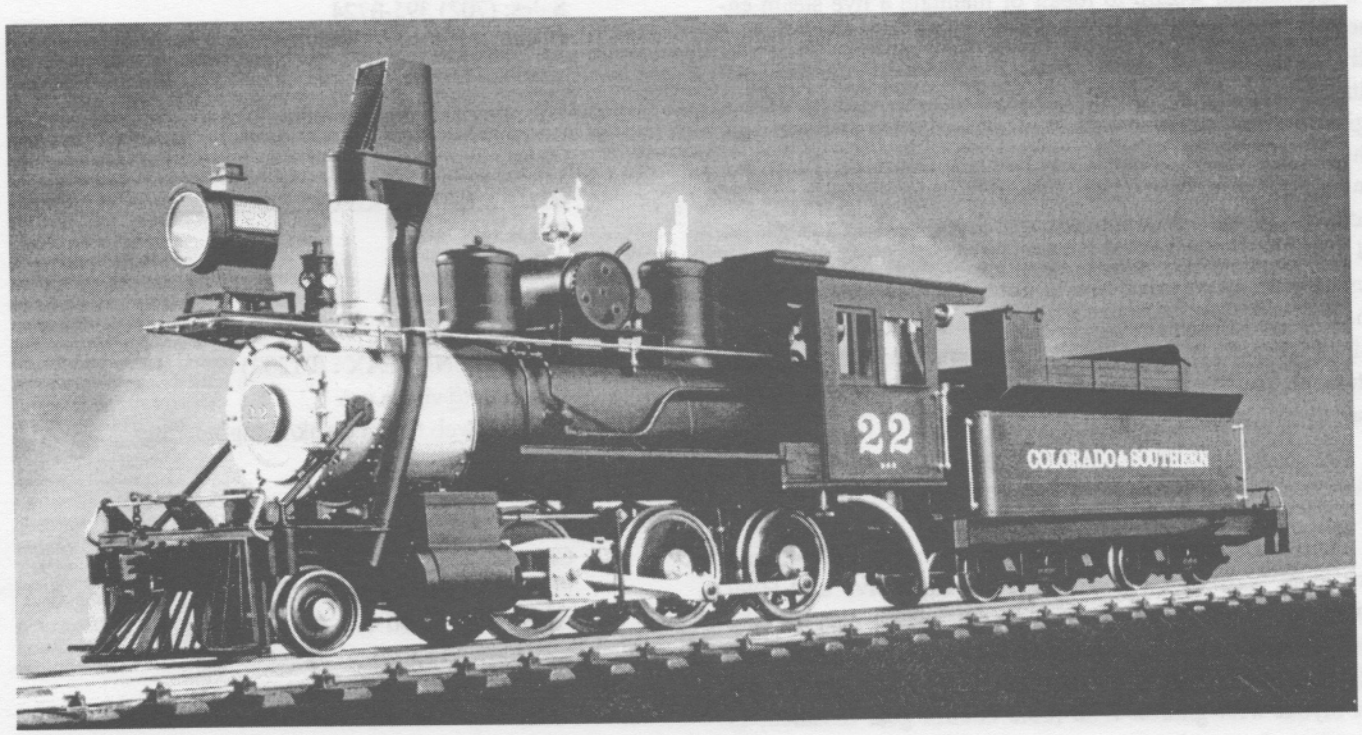
DN1 2TF
ENGLAND
Tel: 01302 328035 (International 011 44 1302 328035)
Fax: 01302 761312 (International 011 44 1302 761312)
sales@roundhouse-eng.com
http://www.roundhouse-eng.com/

Workshop Project

Improvements to the Aster C&S Mogul

by Arthur Cohen



Aster C&S Mogul - photo courtesy Aster Hobby Co. Inc.

In a recent web page there was a request from a fellow named Hung Ta, asking for advice on how to make his C&S Nº 22 run better. Since I have had various problems making mine run correctly, which I solved, I thought to reply to Hung Ta telling him what to do. The first part of my letter to him is me being funny, as usual, but after the first two paragraphs I settled down and gave him some proven advice.

I thought my advice could be useful to all of the Nº 22 owners, as I'm sure I am not the only person who couldn't make this engine operate as it was meant to. Solid and complete advice was difficult to come by when I went to the last convention. A bit here and a bit there, but nothing complete. I am a firm believer in not reinventing the wheel, but I had to with regards to my Nº 22.

To make your Nº 22 work better, try filling the boiler with water, fill the fuel tank with butane, open the smoke door, light a match, and open the two gas valves. Be sure your life insurance is paid up and put my name down as your only beneficiary.

What I did to make my Nº 22 run well is the following. I altered the fuel line to feed gas, not liquid butane from the needle valve body on top of the butane tank.

First you have to remove the needle by just unscrewing it. Then drill a 1.5 mm hole through the original valve body in the tank at the upper most part of the valve body from inside the tank. To do this you have to unscrew the butane level sight window in the front of the butane tank. Through this opening drill upwards through the original cylindrical valve body, drilling as high as you can, and as close to the inner top of the tank as you can. This hole's diameter is not critical. This will connect the inner upper part of the valve with the evaporated gas from inside the butane tank.

With an 8-36 tap, tap a thread in the body of the valve body where the original threads were. Then screw in a set screw tightly so that the hole will be plugged. Cut the original liquid butane line that comes out of the bottom of the tank and solder it closed. This is the 1/8" tube that goes to the flexible rubber hose that

goes to the expansion tank inside the № 22's cab. You will not need to use that liquid butane line any more.

Get a small needle-type 90º gas valve with two 1/8" flexible flare tube connections on it. You will use the valve's original threaded output tubing connection as it is. The input connection, with its valve stem in line with it, has to be soldered, with soft solder, inside the upper part of the original gas valve. You have to clean and 'wet' with soft solder, the inside of the valve where the valve's threaded end will be inserted.

Take the new valve apart by removing the packing gland nut that holds its O-ring seal and unscrewing its stem. This is so that the O-ring seal is not damaged by the heat.

Using soft solder, solder the valve, with its output end pointing forward, in the original valve body's upper ID bore with its threaded outlet pointing forward. The small differences in ID of the original valve and the OD of the new gas valve input OD diameters will be filled with the solder and will easily seal.

All the previous was done to cancel the flow of liquid butane and allow a controlled flow of gas to the engine's burner jet...but we're not done yet. Now you have to remove the expansion tank that's in the cab that previously was fed liquid butane for its evaporation into gas, which then went to the burner jet.

In the outlet connection of the new gas valve, in its small tapered flare bushing, solder in a 16mm long 1/8" diameter copper tube and with its nut securing it to the output end of the new gas valve. On this short protruding 1/8" tube, fasten a 160mm long new 1/8", 3 mm, gas hose and on the other end of this rubber hose install the original gas burner jet.

What now has happened is that the engine's burner will be fed directly with gas, not liquid, from the tender's butane tank. As it was before, liquid butane was fed to the bottom of the expansion tank where it expanded into gas that then went to the burner jet. The flow of liquid butane, from the tender's tank, was controlled by the original valve in the butane tank and the evaporated gas, from the expansion tank, was then fed to the burner's jet through another gas valve mounted in the upper part of the original expansion tank.

It was impossible to balance or control the flow of liquid butane against the required flow of expanded gas to the burner jet. Consequently, the expansion tank would overfill with liquid butane before it could evaporate, and then would then flow into the line going in the burner jet. Liquid butane would end up in the fire box of the engine and the flames it produced, when lighted, were enormous and impossible to control. It took many tries to get the burner to burn correctly and when once the engine was hot more adjustments to both valves had to be made.

This method of feeding gas to the burner jet has completely solved the controlling of the fire problem in the firebox of the engine. It now will correctly light up on the first try. No more big flames shooting out of the smoke box door.

I found another problem with my new № 22. It was the valving to the cylinders. What happened there is that the set screws securing the various rocking or oscillating arms or levers, used to control the valve synchronization to the shafts they're are mounted on were not long enough. It was in the synchronization of the sliding steam valves above the cylinders where the problem exists.

There are various levers or arms that rock or oscillate that control the sliding valves' movements. These arms are mounted on small shafts and are secured in their positions with set screws without indentation in the shafts where they are mounted. Consequently the set screws, which are only 2.75 mm in diameter, have to be tightened very tight so as not to let the arms rotate on their shafts.

The set screws are very short and their interior hexagonal holes, needed for the Allen type hex wrench for tightening, are very shallow, letting the wrench to slip out of them or 'strip' in the hole. These set screws are the correct length as far as the arms' hub diameters are concerned, but are too short to securely hold or retain a hexagonal key wrench in them. Consequently, the arms rotate on their shafts, allowing the dis-synchronization of the engine's sliding valve movement in respect to the pistons' movements. When this happens the engine will not operate. Where this condition exists the problem short set screw has to changed for one about 2 mm longer. The longer set screw has a deeper hexagonal hole that will not let the key wrench rotate or strip, allowing them to be tightened tighter.

The process of synchronizing the valve movements is fully explained in the assembly book that came with the engine.

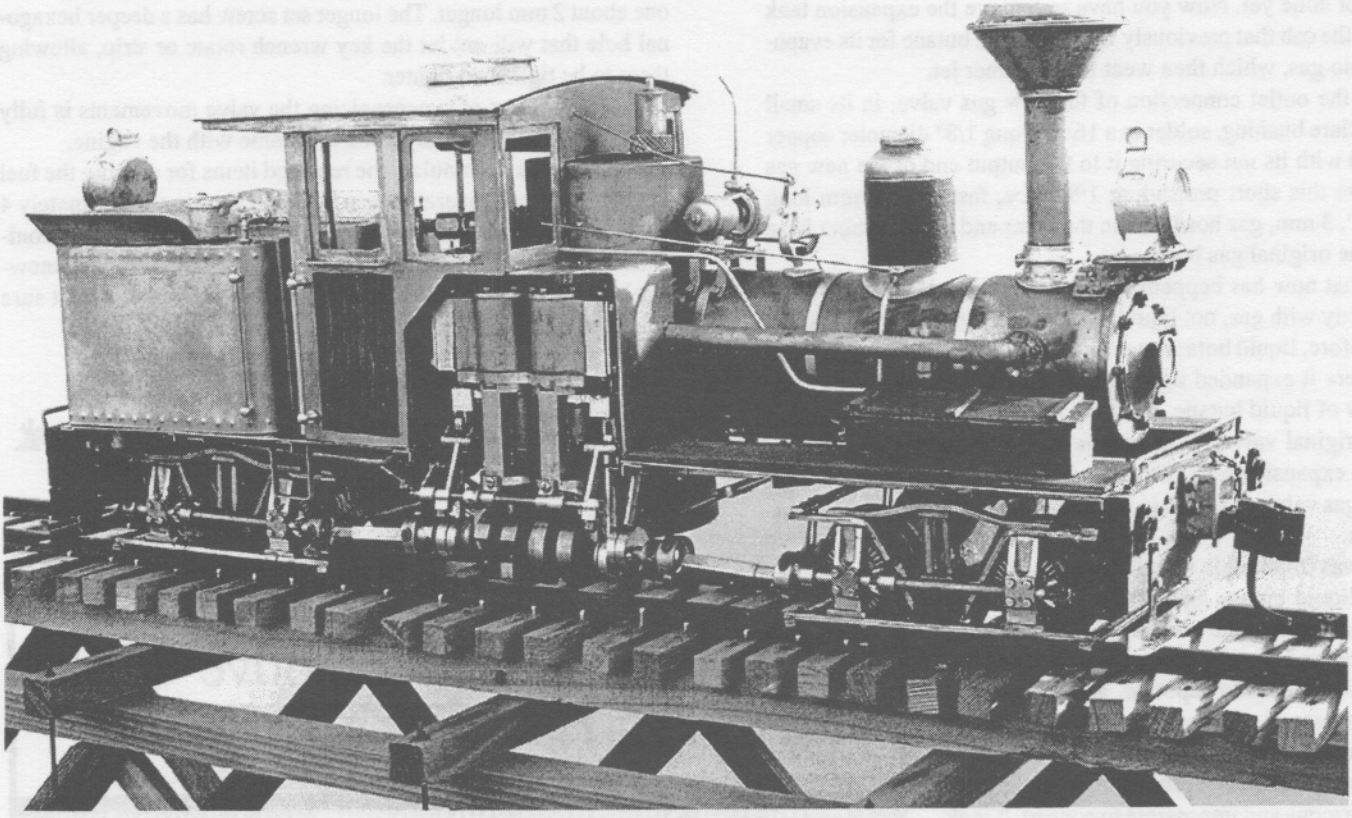
Once you accumulate the required items for altering the fuel system, the whole operation can be completed in approximately 4 hours. The changing of a set screw, once obtained, and synchronization can be accomplished in less than one hour. It's just knowing how and what to do. I hope this solves your problem. It sure solved mine.

Workshop Project

A Shay "From the Ground Up" Part I

text, photos and drawings by Les Knoll

Basic modeling considerations, trucks, universals, and frames

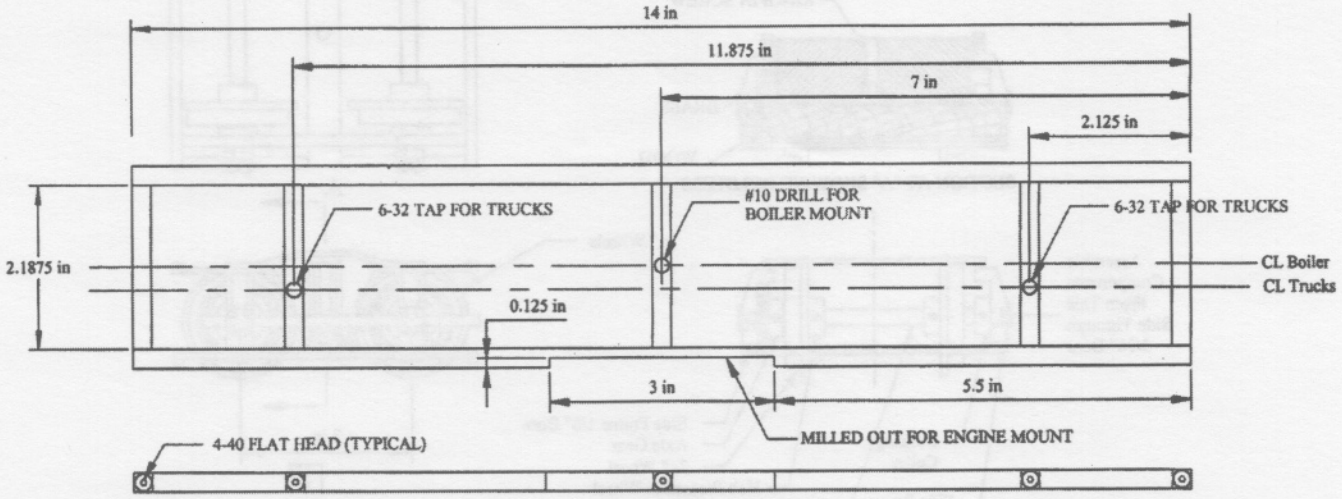


The author's Hobbiton Lumber Co. 14-ton Shay, prior to painting.

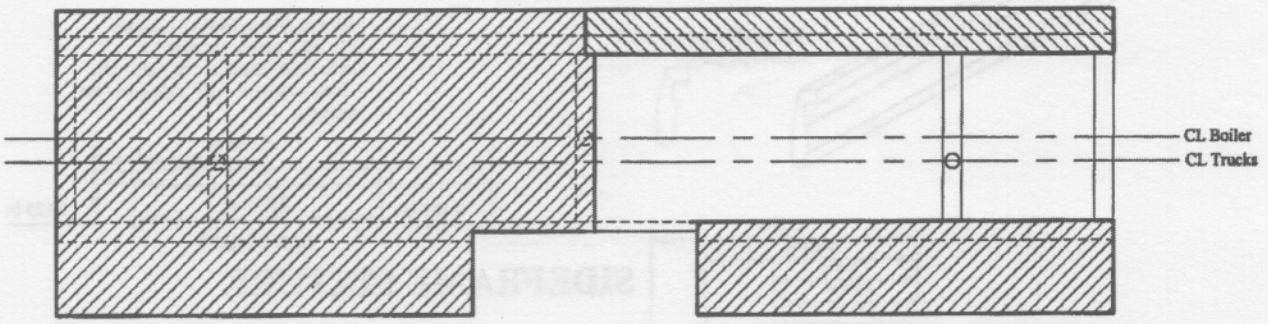
I compare my current adventure with Shays to homeowners who spend years getting their home exactly the way they want it, only to sell it shortly afterward. So it was with my previous Shay. My wonderful little Geoffbilt was the first and only "Tee" boiler Shay that Geoff Coldrick ever built. Over the years it had in essence become a "Les-built" with rebuilds from trucks to stack. After seeing the pre-production Accucraft Shay at Diamondhead, I decided it was time for a change. The Geoffbilt/Les-built Shay ran just fine, but I wanted more prototypical trucks, a working "Tee" boiler, and a "D" valve engine to replace the oscillating cylinder engine. The oscillator was running just fine, sporting new Mike Chaney replacement cylinders, but seeing the new models about to come out made me want something more closely resembling the prototype.

There were three ways to get what I wanted: Simply lay my money down and order the new product, rebuild my existing Shay to my revised specifications, or make a fresh start and build my own. Delivery time of a new run of locomotives is always uncertain, and my lack of patience is legendary. As a 'nitpicker' I could also say that the built up Shay I considered did not have

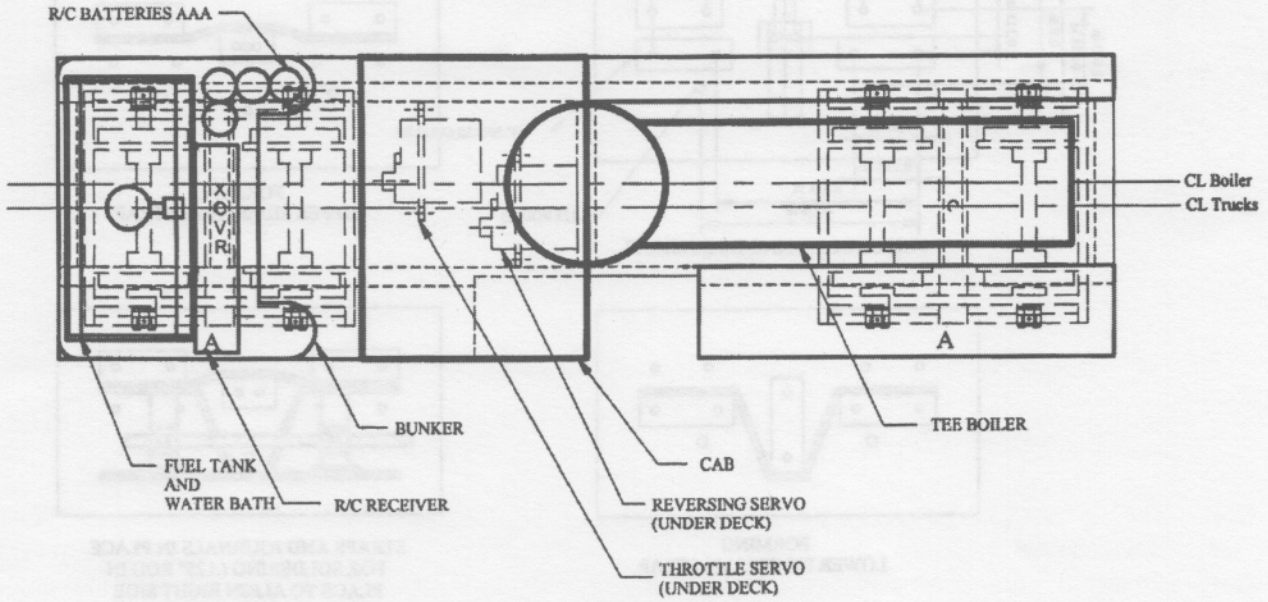
14 TON SHAY
FRAME COMPONENTS AND ASSEMBLY



FRAME
1/4" SQUARE BRASS

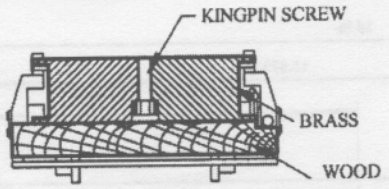


FRAME
WITH .032" DECK ADDED

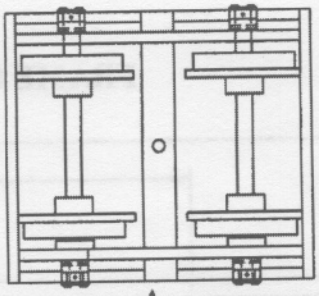


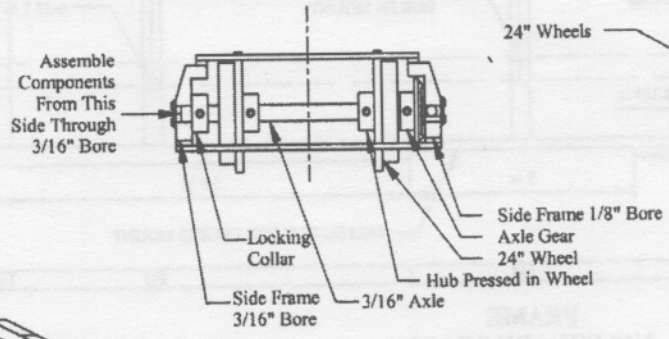
FRAME
WITH MAJOR COMPONENTS ADDED

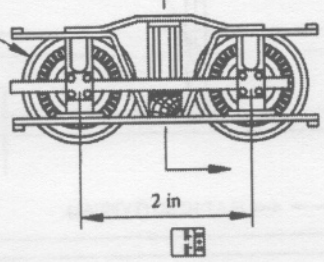
14 TON SHAY
TRUCK COMPONENTS AND ASSEMBLY

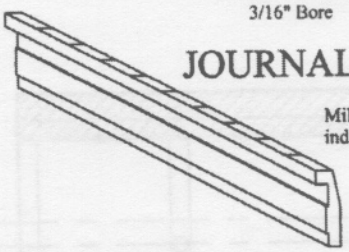


SECTION AT "A" SHOWING BOLSTERS





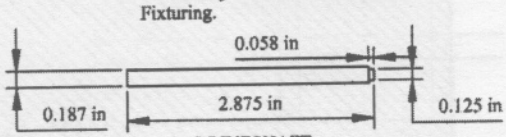




JOURNAL 'EXTRUSION'

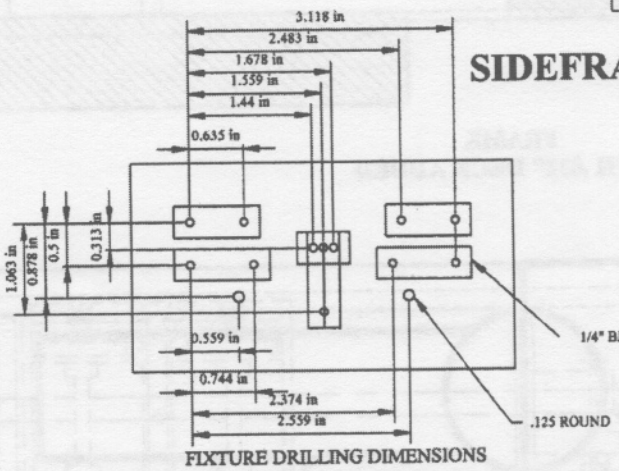
Mill profile, then saw off individual pieces

Mill and drill individual journals
Four get a hole in the side for Drive shaft. These are on right side.
All initially have .125" axle bores for Fixturing.

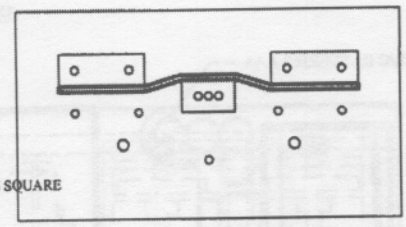


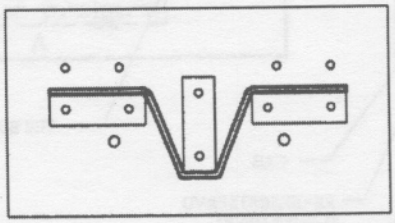
DRIVESHAFT

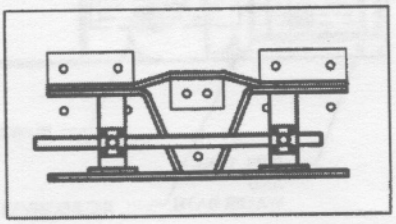
SIDEFRAME FIXTURE



FIXTURE DRILLING DIMENSIONS

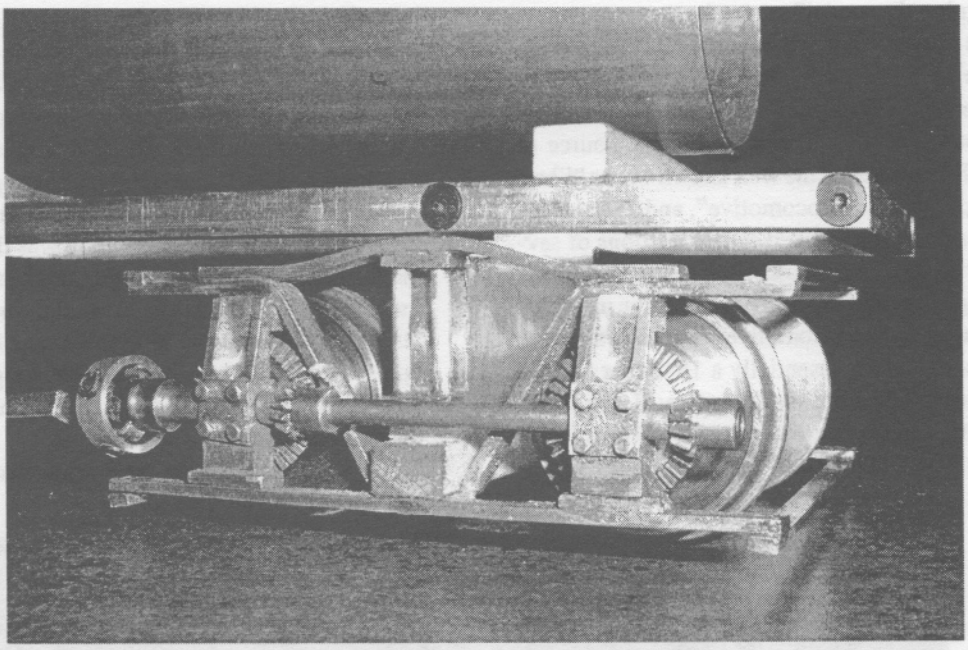

FORMING
UPPER SIDEFRAME STRAP


FORMING
LOWER SIDEFRAME STRAP


STRAPS AND JOURNALS IN PLACE FOR SOLDERING (.125" ROD IN PLACE TO ALIGN RIGHT SIDE JOURNALS)

working Stephenson's valve gear, but it did look more prototypical in the fact that the cylinders at least stood still. I had thought of simply rebuilding the Geoffbilt with all the desired features, but with all the major components essentially being changed, I might as well start "from the ground up".

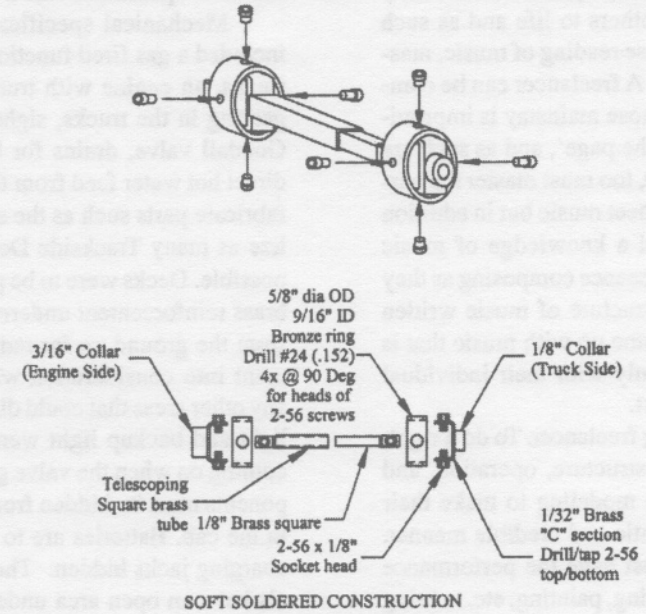
There would be one major test of this decision, and fortunately it was one of the least costly to do. I figured that if I could build the geared trucks for the Shay, I could do the rest. My experience from scratchbuilding a couple of 2-4-4-2 Mallets, rebuilding my Pearse 2-6-0 into a 2-8-0, my Shay alterations, and my scratchbuilt steam streetcar showed me I could build all the other components that could not be purchased. (I had to keep saying that to myself to get up the guts to try this). Having been a mechanical design engineer all my life, I decided to sit down at my trusty CAD system and design a Shay model based around a set of trucks that I would be able to build with modest machining skills. I think one of the major tricks in scratchbuilding is designing a model that can be built with existing skills or those that are possible to acquire.



Closeup view of the author's scratchbuilt front truck.

Designing a model may be a new concept to many. Those who favor true-to-prototype modeling may say "All I need to do is scale down what the original builder did". This doesn't always work, especially in our live steam hobby. Laws of physics do not scale down, nor do methods of attachment or structural support. Available components, and items in our models not found in the prototype (such as radio control) make it necessary to build the models differently than Baldwin, Cook, or Lima did, even though they look the same on the outside. There are many ways to make the same parts, depending on what skills and facilities the builder has available. Some builders have the skill and facility to cast their own components. Others do not, but can so skillfully fabricate parts that they appear as castings. Some builders know their limitations and can design around them to produce what is needed.

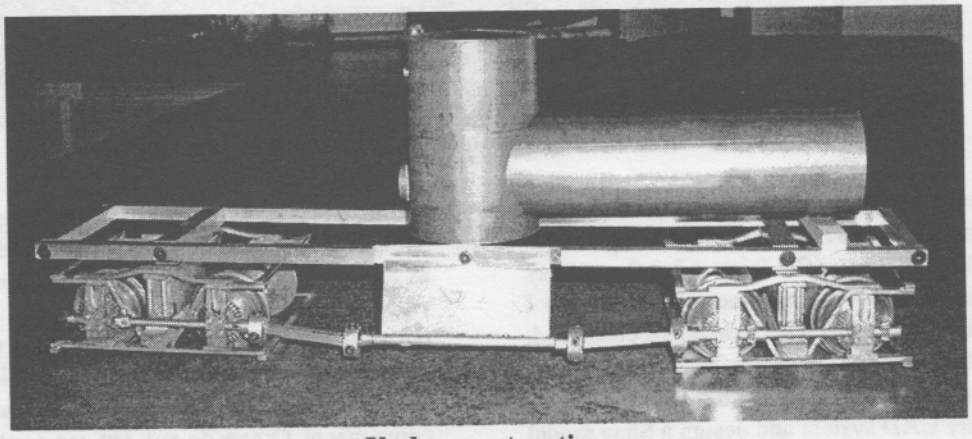
UNIVERSAL AND SLIP JOINT ASSEMBLY



SOFT SOLDERED CONSTRUCTION

This is where "designing the model" comes in.

Since this was a project 'from the ground up', I had to make the decision whether to accurately follow a given Shay prototype or do a freelance model. I looked through all available photos on "Shaylocomotives.com" which is a fantastic source of Shay information. I also researched the well known works "Shay, Titan of the Timber", "The Shay Locomotive", and "Steam and Thunder in the Timber". I found I liked the proportions of several locomotives and the features on others. To get a Shay that I would like well enough to build, I would have to come up with a 'crossbreed' of several prototype locomotives. The closest in size and proportion was serial #495, essentially a 15 tonner built in 1895 for the Watson Lands Lumber Company. Looking at Michael Koch's photo of this locomotive, it was obvious that it did not have an electric generator and the headlight was a different style than I liked. I also like backing lights, lacking on this locomotive. The exhaust piping is different than my two cylinder engine required, and the cab wood paneling was a different style than I planned on using. There is not enough dimensional information available on this locomotive to recreate it faithfully since available information has it scrapped in the late 1920's.



Under construction.

The late, great John Allen looked at the model railroading hobby as an art form. As an art form, freelance modeling and modeling by proportion rather than simply by scale have a respected place. Those that model faithfully to the prototype can be compared to musicians who play strictly by sheet music. They faithfully bring the compositions of others to life and as such require a set of skills that include precise reading of music, mastery of their instrument, phrasing, etc. A freelancer can be compared to the Rock or Jazz musician whose mainstay is improvisation. They play notes that 'ain't on the page', and as such are composers as well as performers. They, too must master the performance skills of those who play by sheet music but in addition they require compositional skills and a knowledge of music theory and structure, since they are in essence composing as they go. They draw on the melody and structure of music written before them, and if they do it right, come up with music that is similar to that played before them, only with their individual touch. Both have their place in their art.

So it is with the model railroading freelancer. To do it right, they must be quite familiar with the structure, operation, and custom and practice of what they are modeling to make their models look and perform in an authentic and credible manner. Like the musical improvisor, they must have the performance skills such as machining, metal fabricating, painting, etc. to bring their work of art to life. Both prototype modeler and freelancer have their place in our art.

Before proceeding further, I made up a 'wish list' or set of specifications for my new locomotive based on likes and dislikes on my previous Shay, more prototypical major components, and features I never got around to adding to the old Geoffbilt. I envisioned myself as an applications engineer at the Lima plant designing a locomotive to customer order.

The first major specification was the size and scope of the model. Although using a prototype as a starting point, this locomotive was to be a freelance model, incorporating all the features I liked in smaller Shays of up to 15 tons. It was to be no larger than the Geoffbilt - only 14" long, and height was to be under 6" from track to top of cab. This makes it slightly smaller than a Lindsay Shay.

I have come to the realization that my locomotive roster may not be true 1:20.3 scale. Everything has been based on my first locomotive, a Pearse 2-8-0 (ex 2-6-0) which is a really tiny Consolidation, and the 'Big Hauler' rolling stock which looks well running with it. I scratchbuilt my 2-4-4-2 Mallet to match and it is also small for a 1:20.3 locomotive of this type. The Accucraft 1:20.3 scaled C-16 would dwarf them both. Like many garden railroaders, I am caught in a scale trap. What I presently have is closer to 1:22 that 1:20.3. Rather than change everything over, I live with it. I am a scratchbuilder by nature, and model more by proportion than scale. (All purists may step out at this point and take a few moments to gag).

Mechanical specifications were considered next. These included a gas fired functional "tee" boiler, prototypical geared trucks, an engine with true Stephenson's valve gear, 3:1 ratio gearing in the trucks, sight glass, water bath for the gas tank, Goodall valve, drains for both lubricator and gas bath, and a direct hot water feed from the boiler to the gas bath. Rather than fabricate parts such as the stack, domes, bells, etc., I would utilize as many Trackside Details and Ozark Miniatures parts as possible. Decks were to be planked with actual wood, with sheet brass reinforcement underneath. The model was to be designed from the ground up for radio control, taking component placement into consideration when designing frames, bunkers and any other areas that could disguise these components. Both headlight and backup light were to be functional, with the backup coming on when the valve gear is in reverse. All electronic components must be hidden from view. No servos were to be placed in the cab. Batteries are to be rechargeable, with switches and charging jacks hidden. The finer scale commercial Shay models have an open area under the boiler as the prototypes did. I wanted to have this open frame look in my new Shay as well.

With this new found space I considered modeling brake rigging.

It is not possible to purchase a ready built Shay with all these features. At present it is not possible to purchase a ready built Shay as small as the one I proposed to build, either. This is, however, my taste in Shays. If I am to scratchbuild it, I might as well build it just the way I like it.

As I said earlier, I figured if I could build the trucks, I could build or buy the rest of what was needed. Some truck castings and parts are available, but these build up into trucks too large for my model. The trucks on this Shay have only a 2" wheelbase, and are built using 24" wheels supplied from Hartford Products.

A truck design was developed using CAD. Some overall drawings are included here. The basic design is built around Hartford 24" wheels and Chicago Gear 48 pitch 3:1 ratio bevel gears. The gears and pinions are available from Sulphur Springs Steam Models. The truck frames are soldered rather than bolted together. Assembly is done from the left side of the trucks. That side has a 3/16" bearing for the axle, and all gears, wheels, and collars are assembled onto the 3/16" shaft as it slides through this bearing.

One feature that was designed into the trucks is that they have actual wooden beams as was the practice for Shays built in 1895. The wood components can be slid in and out of the brass assemblies and are designed to be at least somewhat load bearing. The upper beam is brass and does appear to bear a greater portion of the locomotive's weight.

Note that the wheels have been modified to mount to shafts by means of set screws. The collars and bevel gear mount in the same fashion. Using this system, the side to side clearance in the axle, the wheel gauge, and the bevel gear engagement can all be independently adjusted. Note that adjusting the side to side clearance affects the bevel gear engagement. To compensate for this, the side to side clearance is adjusted first, then the gear engagement or wheel gauge follow this. With this design, switching gauges to 32mm is quite easy if brake detail is not modeled.

The most difficult part of building the trucks was the journals. On commercially available Shay models these are castings. This is beyond my abilities, so I had to develop a journal design that could be done in a milling machine. I designed the trucks so that the journals on both sides would be identical except for axle bores and holes for drive shafts. After developing the shape of the journal, I milled out a 'profile bar' which was quite a lot like an extrusion. I made this about 1 1/2 times as long as all eight journals would have to be. When this was done, I simply sliced off pieces like a salami. Each 'slice' was wider than its finished size, then the sides were milled to the proper width on each part. I made extra length of the 'extrusion' so that extra parts could be made in case there were mistakes in subsequent operations.

Holes for axles, drive shafts, and tapped holes for journal covers were put in on the individual parts. Each journal cover is actually screwed on with four 00-90 screws. This is tedious, but the hex heads look great and the covers hide the through reamed holes for axles. As a final operation, the top of the journal face was milled out to simulate the cast gussets in Shay trucks. An oil hole was placed in each journal to easily lubricate axles and drive shafts. I have lost too many parts to excessive wear, and want to be able to lubricate as many moving parts on this locomotive as easily as possible.

The key to building accurate Shay trucks from individual brass pieces is building them in fixtures. This is the alternative to cast side frames. Components of the truck side frames consist of the machined journals and several parts hand formed from brass bar stock. To ensure accuracy, fixturing can be made to serve as a gage for the parts being hand bent and will later serve as a guide for assembly. It may take several tries to get bent parts to fit in the fixture correctly, but when they do, you know that they will work in the final assembly.

On the down side, it will probably take as long to build the fixture as it will to make the parts. This is however no different than the model builder that makes molds to cast details for just one model. The alternative to fixtures is hand positioning all component parts for four truck frames, and hoping they all come out the same. In a way, making the frames is like mass production, four identical assemblies must be made.

After the bar stock parts are bent using the fixture as a gage, these parts and the journals are positioned into the fixture and soft soldered. Bolting would be nice, but precision positioning of bolt holes in hand bent parts is a little too much to ask. The frame components could be bolted after soldered assembly if desired by drilling and tapping through the soldered components and adding screws. The frames were designed so that they never have to come apart. All components are assembled from the left side of the truck. Again, the benefits of designing the model. The width between the frames was determined in the CAD design. The axles, spacer collars, and wheels can be assembled to the proper width then used as a fixture for soldering on truck cross members. All gearing and drive shaft components are then assembled and adjusted for absolute minimum shaft play without binding. The gear and pinion engagement is adjusted next, followed by wheel gage. The wheel gage must be centered on the hole in the bolster for the queen post. A final test for each truck is that it should be able to freely roll on a smooth surface such as glass while back driving the drive shaft. Gear engagement must be full and pinions aligned with their respective gears.

After the trucks were built and adjusted, the next logical component to build was the frame. After studying Al Armitage's Shay drawings, I determined that the frame rails are positioned around the boiler and the rest of the frame is essentially off center to the frame rails and boiler. Normal boiler offset on a Shay was about 6". The entire outline of the locomotive was worked out in the initial design stages. The frame was designed using CAD with the locomotive outline as a guide. The side rails are made from 1/4" square brass as are the crossmembers. Crossmembers are located at front and rear, at the centerlines of the trucks, and at the center of the boiler 'Tee' section. Side rails and crossmembers are assembled with flat head 4-40 screws. This has turned out to be quite robust construction. The side rails are probably wider than they need to be, but this un-prototype width is covered completely by various forms of decking. The cab floor and bunker areas are completely covered by brass sheet. The area under the horizontal portion of the boiler is left

open as was prototype practice. Although the decking on either side of the boiler is real wood, there is brass sheeting underneath it to add structure should the locomotive be accidentally picked up by the side decking.

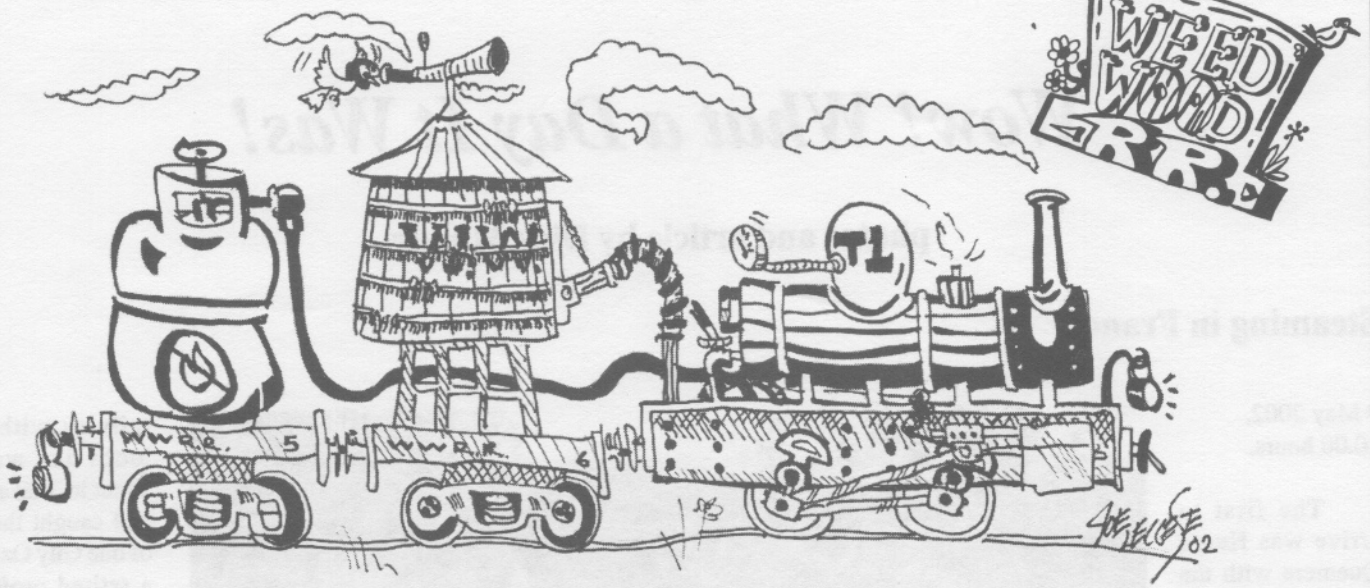
When the frame with metal decking was complete, I mounted the trucks to it and did my first 'track test'. To my delight, both trucks ran well after proper adjustment of the gears and collars.

I had not initially made a decision as to what universals and slip joints to use. There are at least two types available from Sulphur Springs Steam Models. I had built some previously when I adapted the Graham Shay 1 engine to my Geoffbilt Shay. These were built in the same manner as the Geoffbilt with small pins soldered in to the outer rings bearing against holes in the brass yokes. I got some of the commercial universals and evaluated them for my use. The DJB units are well made and are well detailed, but there was no way I could shorten them to the tight constraints of my relatively tiny Shay. To put this in perspective, my locomotive is about 1/2" shorter than a Lindsay Shay, and nearly 2 1/2" shorter than the new Accucraft Shay.

The decision was made to try making the universals myself. My good steaming friend Mike Chaney described how he makes these with the 'shaft' portion being cheese head screws turned into the yokes, and the 'bearing' portion being holes in the outer ring. I machined up some bronze rings and made brass yokes which are actually "C" sections. On the top and bottom of the "C" section I put in 2-56 socket head cap screws available from hobby shops that handle model aircraft supplies. The "C" sections are soldered to collars that go on either truck driveshaft or engine crankshaft. After a few practice pieces to hone by building skills, I was able to come up with a reasonable set of working universals. K & S telescoping square tubing and square brass bar were used for the sliding joints. Thank you so much, Mike, for the valuable tip!

I assembled the universals onto the trucks and made a makeshift bearing and shaft arrangement to simulate the Shay engine crankshaft so I could test the drive train. After adjustments were made, this drive assembly would ride smoothly on a glass plate with no binding. The mechanism was able to freely back drive itself with no binding. This is something it will never be called upon to do in actual operation. You never push a Shay by hand to clear the engine of condensation. It was still nice to know that the mechanism was built well enough to do that.

So far the project had been charmed. Nothing had gone wrong, and every attempt to design and build components exceeded my expectations. As you will see in future installments, that little fairy tale didn't last long! But don't worry, it all has a happy ending. Next time I'll tell about the 'Tee' boiler, firing systems, cab and bunker, radio control, and some of the detailing.



Cabless loco "T1" on an all day run...

Wow! What a Day It Was!

photos and article by Dick Mundy

Steaming in France

9 May 2002,
10.00 hours.

View from the author's bedroom window when things were starting to happen.

The first to arrive was Herve Quemere with the boot of his car full of interesting boxes, and I showed him through to the track and left him to it.

Next came Guy Ozanne and his wife Simone with Philipe Creuzevault and his wife Isabelle...thereafter I am sorry, I could not keep up with the arrivals in any respectable sequence. I recall Dominique Osaka and his wife arriving and sometime later Jan-Claude Grancher, the President of GEMME, who organises Expometrique. Many delightful people in between and later, and by 11:30 we had 22 adults with 4 offspring and 26 live steam locomotives to run, plus some other historic Bing examples and partially built new models on show.

At 10.00 we had steam up provided by Richard Ince (visiting from England) with a beautifully lined out example of Lady Anne, and Hugues Gidel (visiting from the Auvergne) running his 17 year old Merlin. Both splendid. Whilst these were running, other arrivals got steam up and so the day continued, self-policed and self-timed with no serious hiccups.

It had been suggested that a timetable be issued and a form was, indeed, prepared, but in the event that proved quite unnecessary. How nice it is to find these so called "Live Steamers" are not only nice people (like woodworkers) but are so disciplined.

There was always something running, light engine, full and magnificent trains, even at one time a hot air engine with a train of old fashioned wagons!

At this point it would be pertinent to explain how this unique situation came about. Firstly, I had built a small 45mm garden railway with two loops and written about it. That article had caught the eye of one Guy Ozanne, a retired professor living near Paris who had the kindness to contact me then, and time passed. A year (!) later he told me about Expometrique, a splendid exhibition in Paris devoted to model railways, and my wife kindly map read us to The Dome. There I met up with Guy (he who offers translation of SitG articles into French) and I saw these wonderful brass models built to 45mm gauge on show and running on demonstration.

Subsequently, Guy and his charming wife, Simone, came to visit us but it was some months later as Guy had a spell in hospital in between. We had a lovely day together, talk mainly about railways, of course, and so the idea was born - let's have all these guys with their beautiful models come here and really give them a challenge, 34M loops with up to 5% gradients to overcome.

Guy, being a retired professor, is a splendid organiser and he provided a list of possibles; I prepared an invitation in my very poor French which was, too late, pointed out to me by a neighbour, and sent them off. The response was extraordinary as confirmed by the numbers attending. We expected two or three, perhaps four, even five, but twelve plus! With their partners, children and more than one locomotive each, almost overwhelming. But we got over that by getting another box of red wine and more cheese and baguettes for lunch!

However.....up came another situation entirely unplanned. Somehow the press got to hear of this private event and two weeks prior a report was published in our local newspaper, re-

What a collection! Completed and part-built models, various gauges, fully home built and restored by the man in the patterned shirt second from right. The locomotive front left on the table with oscillating cylinders was seen running very smoothly and fast later in the day.

peated the following week, and then reported in *La Republique.*

Oh dear! says I. Or words to that effect (use your imagination!).

Just think of the situation. It was Ascension Day (public holiday in France), free snack at lunch time been offered in the invitation, and it had been publicised! A head count was made (with difficulty - why do people have to move around?) at 11.30 hours reporting 34 adults and 4 offspring. A head count was not made at lunch time but there were certainly 8 plus children scoffing away with parents (the children included a lovely little 16 months old girl who would hold the hand of any one to help her up and down the steps - pity they have to grow up).

The late afternoon head count gave 63. Due to the continuous coming and going it was impossible to keep any record of the 'gate', but the final guesses put it about the 150 mark. One visitor who came both in the morning and the afternoon was a 12 inch to the foot man, a chauffeur on the preserved 141R420 on shed at Clermont Ferrand.

The day's steam running was relatively accident free. A spirit fired loco caught fire, but was rapidly quenched by being doused with beer! And a Roundhouse 'Billy' came a trifle too fast into the curve at the bottom of the gradient and decided to go straight on. A bit bent at the corner of the buffer beam, but nothing more serious that I saw.

One particular thing that struck me was the variety of the visitors' different locomotives that were running. From the splendid Shay, through American and French outline, down to the smallest Roundhouse. All seemed to be enhanced with items that made them so attractive: driver figures, chains, buckets, lamps and so forth, and even a full length American freight train - absolutely splendid - and the builders, owners and drivers deserve every congratulation.

There was an experimental single oscillating cylinder locomotive in three sections which caught everyone's attention. I especially liked the idea of using a standard Camping Gaz butane cylinder as the gas tank on this 'train'.

After a few gassing up problems, we even had a hot air locomotive circulating with a train of old fashioned UK broad gauge carriages.

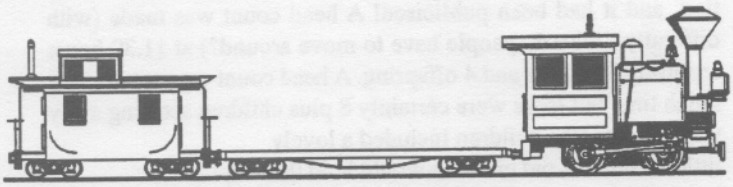
Now it is time to say thanks for the generosity of the visitors. Each one of the Live Steamers contributed towards the Casse Croute, not only with gifts of wine, beers and food, but help with the preparation and serving of the splendid lunch that we all enjoyed sitting outside in the sunshine. My thanks to Him that provided the sunshine - it rained the next day.

In the matter of thanks I must equally single out my wife, Gillian, for her help and support in the build up and on the day itself; and then to Guy Ozanne who without his 'Liste' and encouragement it would never have happened.

But THANK YOU ALL. Can we look forward to another similar occasion? Both Gillian and I hope so.

Back view of Pierre Remy encouraging rapid production of steam in his free-lance 0-6-0 with a blower and three superintendents!

Serious discussion between Jan-Claude Grancher (president of GEMME, which organises the annual exhibition, Expometrique, for model railroaders iin Paris) and Pierre Remy. It is worthy of note that one of Pierre's two locos, not the one in the photo, is an Aster he bought less its boiler and meths furner for only FF500 (USD$71.00) in a brocante (like a garage sale in the States)!!!



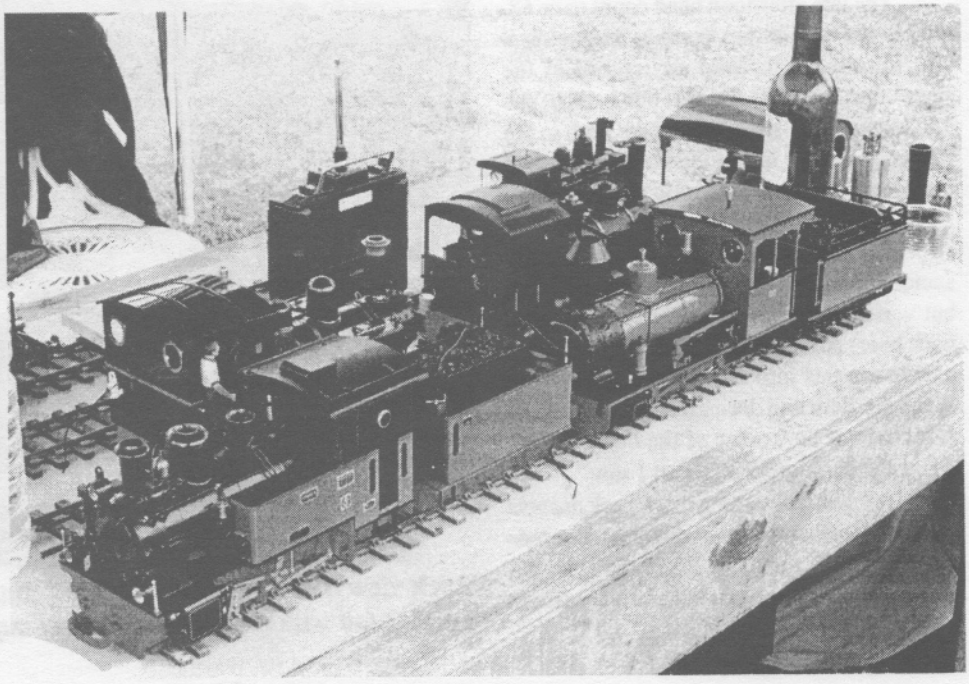


Photo right: **The five locomotives of Dominique Osaka - they are fuelled by gas and meths, and not by the wine from the bottle in the background!**

Upstate (NY) Steamers

Report and Photos by Chuck Walters

Spring comes to the Frozen North

About a year ago, while steaming at the home of your editor, it occurred to me that I do not get the chance to steam with my friends nearly enough. It's okay to go out to the back yard with your engines and run by yourself once in awhile, but steaming with friends is a much more preferred way to spend a Saturday. With that in mind, I approached my friends and steaming compadres, Ron Brown and Tom Bowdler, and told them that I wanted to form a small group of steamers to get together once a month to run steam, have a bite to eat, have great conversation and then run some more steam. This idea was met with great enthusiasm and on that day the **Upstate Steamers** group was born. No dues, no officers, just good steaming and good friends.

New live steam enthusiast, Don Sauer (left) watches Tom Bowdler prepare his Accucraft C-16. Rich Goodin (right) looks on.

Instead of having the monthly steamups at one person's home, it was decided that we would rotate the steamups among

Some of attendees at the first official *Upstate Steamers* steam up for 2002.

our small group. This would allow everyone to show off their layouts and rotate the duties of playing host.

Our first official steamup was going to be on April 6th at Ron Brown's home at Paradise East. However, as the day approached, Mother Nature decided that we had not had enough winter, so she dumped some snow on us and cancelled our first steam event.

Undaunted and refusing to be discouraged, we knew there would be more chances to steam in the months to come. The next chance came on May 11th at the Twin Lakes Railway in Oswego, New York.

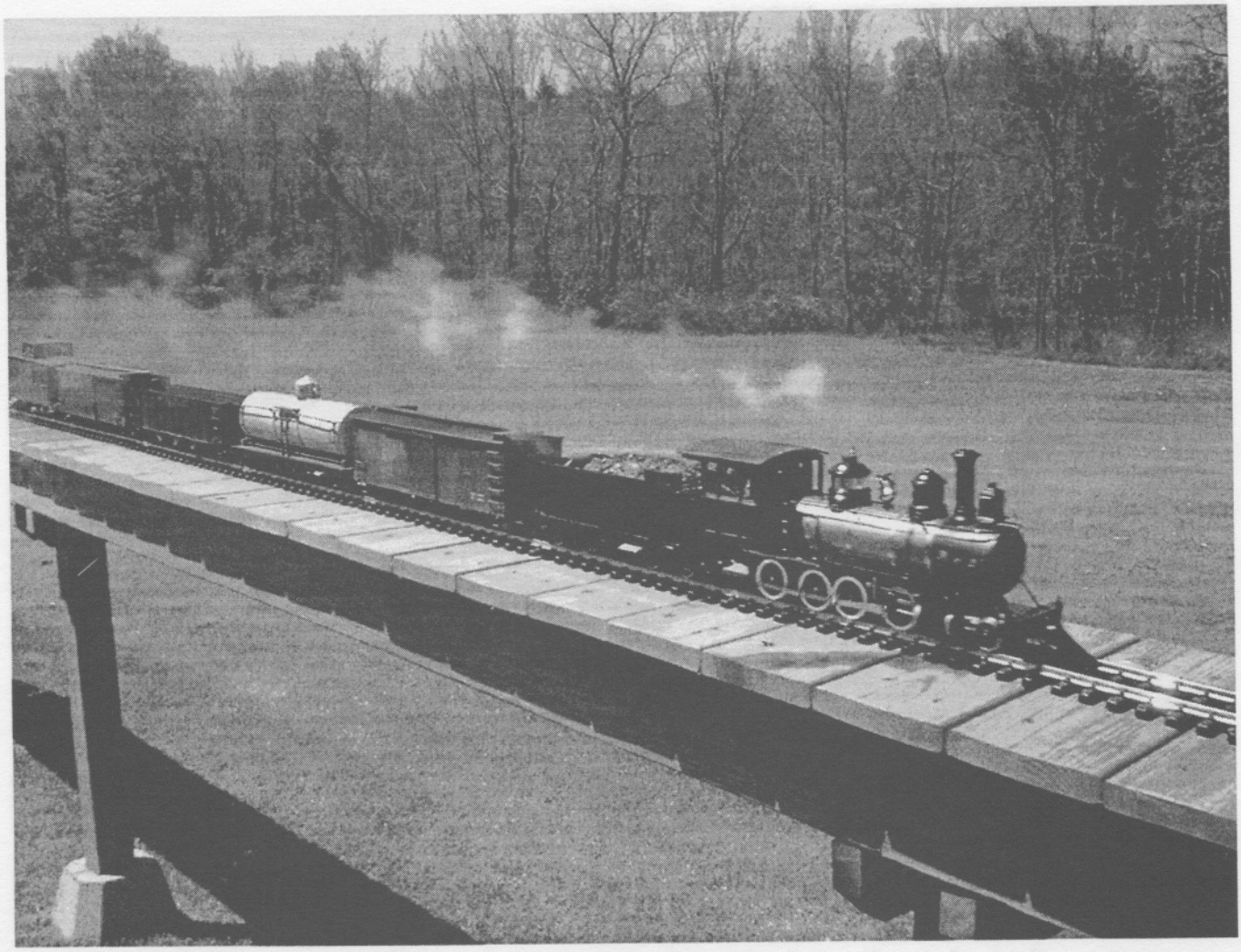
The day started out with a stiff breeze and a glint of sunshine, but by 9:00 AM the wind had died, the sun was shining in its full glory and the temperature was at a tolerable 50 degrees Fahrenheit. My fellow steamers started showing up by 10:00 AM and after a quick cup of coffee and a couple of donuts, we were heading out to the layout. Six members out of the original eight and one guest showed up for the steamup.

The Twin Lakes track is a new raised layout in the shape of an oval that is approximately 22 feet across by 70 feet long. The actual track consists of a single mainline, code 332 rails with a radius of ten feet, and there are two sidings in the steaming bay. The yard was full with engines and there were still a few more engines on the ground waiting to have their turn in the sunshine. You would have thought that the sidings were representing the yards at the Cheyenne, Wyoming shops in the heyday of steam. What a collection! We had two Roundhouse Forneys, two Catatonk Heislers, a Catatonk 24 ton Shay, a DJB Engineering Climax, a Roundhouse Sandy River #24, a Roundhouse Sammie and a couple of Accucraft C-16's, one of which was my own engine that had just arrived two days prior to the steamup.

For me, the highlight of the day (besides running my new C-16) was seeing the DJB Climax run. Rich Goodin of Iowa wasn't sure how the engine would run as this was its maiden voyage on a track, but he was very pleased when it was placed on the track and ran well. These are built by DJB Engineering and use the GAGE TVR1 engine for power.

Another highlight for all of us was the highly modified Accucraft C-16 owned by Tom Bowdler. Tom has done extensive modification to this engine. He extended the smoke box out about an inch and built a new wooden cab for the rear.

Don Sauer of Rochester, New York joined us as a guest for the day. Don is a new live steamer and brought a brand new Roundhouse Sammie with him to steam. Don spent the day observing the steam up process and then decided to try his hand on the mainline with Sammie. With guidance from his fellow attendees, Don prepped his engine and sent her out to the mainline. The engine was having first steaming jitters and had diffi-



Tom Bowdler's beautifully tricked out C-16 and train, out on the mainline at the Author's steamup in Upstate New York. Dig that plume!

culty maintaining any pressure.

After everyone put their collective heads together, we determined the engine most likely had O-ring problems and since it was new, should go back to the dealer for repair or replacement.

My wife Annette and Marie Brown fixed us a great lunch. We all went inside to eat and socialize. It's funny - put seven live steamers together for the day and the conversation is always about the hobby. Put those seven modelers in a dining room for lunch and you would think that we'd talk about other things. Not a chance, it was, of course, about steam and more steam. Now that's my kind of discussion!

After lunch it was back out to the track for an afternoon of steaming. The final engine of the day to make a run was my new Accucraft C-16. I ran her light for the first run. All oiled, watered and gassed up, she was ready to be lit. With that familiar pop we all love to hear, the C-16 came to life.

Within a few minutes she was on her way out to the main to make her maiden voyage. The first few feet were met with cheers and then she slowed down on the backside of the track and so did my heart as it fell out of my chest. The C-16 struggled for a few more feet and then perked back up until it got back around to the backside of the layout, same spot as before.

This happened a few more times and then it occurred to us, it couldn't be a coincidence that the pattern is exact. We examined the track and found a flaw. The front truck of the C-16 was being lifted in an odd way, due to a dip and a hump in the track causing the truck to lift and get caught under the frame of the engine. When it hit the next curve, it righted itself and ran great again. I was glad it wasn't the engine, but discouraged that I had a flaw in the track. By the time this report is published, it will be fixed.

The first official steamup of the **Upstate Steamers** was a great success, and we can't wait to do it again. Our numbers will grow with time and so will the wonderful locations we will be able to steam at. We would love to have you join our group. If interested, contact me at cwalters@twcny.rr.com.

Next month we are off to Tom Bowdler's fine raised garden layout. I am starting my back exercises now just thinking about all the bending we will have to do to run our engines. Til next month.....

Workshop Project

Simple R/C for the Accucraft C-16

Conclusion

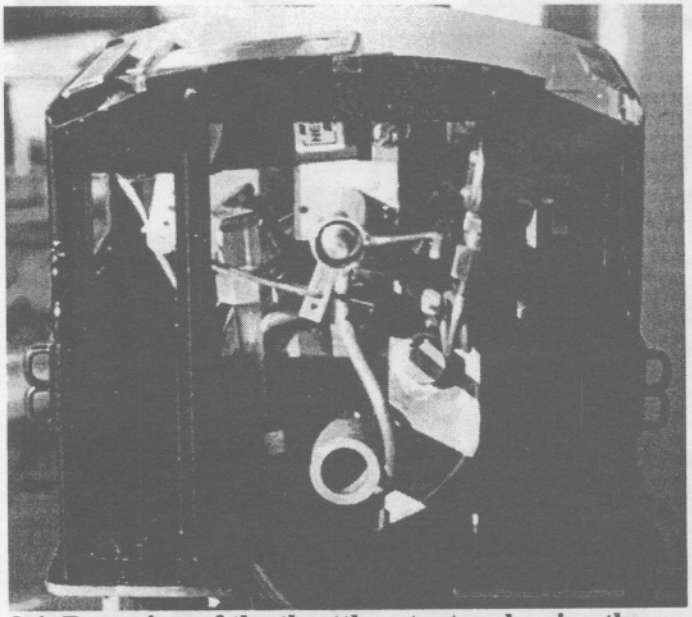
article & photos by Peter Thornton

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

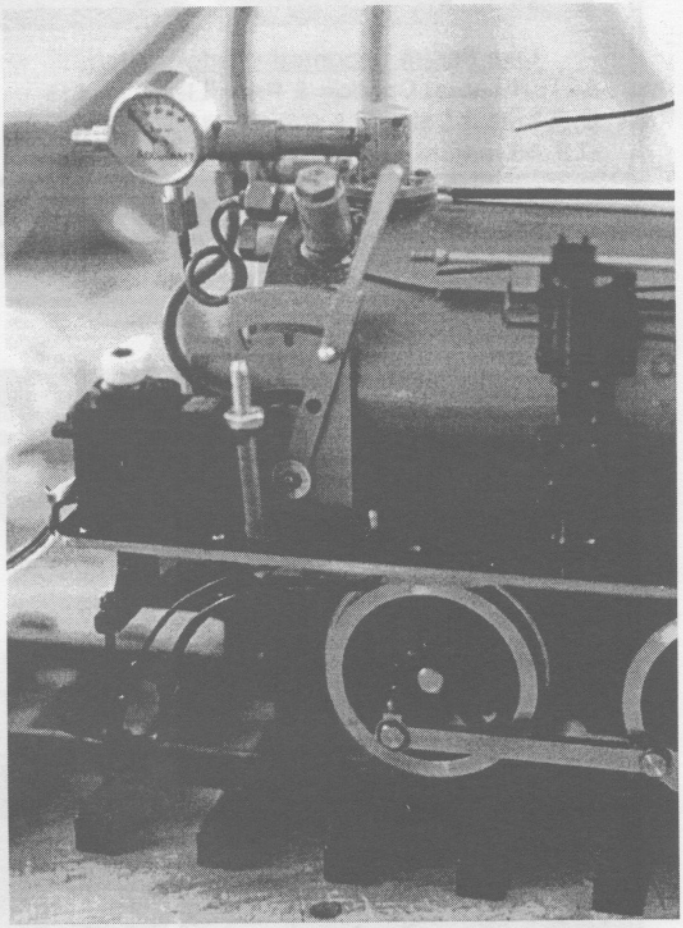
Reversing Servo

The reversing lever on the right side of the cab needs a few modifications before you can add the servo, and that means removing the cab. This procedure is quite straight-forward, as it is held on by 6 nut/bolts from under the footplate. However, on #42, one of the bolts is above the oil/air tank and cannot be removed without dismantling the tank, so the nut must be eased off using long-nose pliers from inside the cab. Once the nuts are off, you must undo the nuts holding the handrails in the front of the cab, then gently ease the cab off around all the boiler bits, carefully moving the various rods and pipes that enter the front.

The standard size servo is too big so I bought a mini-servo at GPA Hobby. The one shown in the pictures is a Hitec HS-81MG, which cost me $28, almost as much as the whole R/C system! However, it has metal gears and 41 oz/in of torque: that's over 5 lbs of pull at the 1/2" throw I'm using, which is probably overkill.

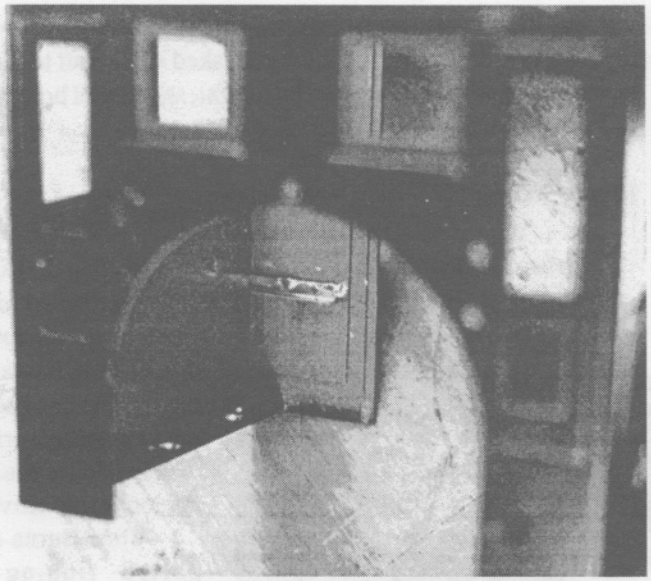


3.4 Rear view of the throttle actuator showing the geometry of the component layout.



4.1 Johnson bar and its servo being trial fitted using the existing holes for mounting the cab.

The reversing lever (Johnson bar to some) has a sprung keeper running in a slot, which I removed completely and decided I didn't need. It is there to make sure the small bolt on the upper part of the lever makes a positive connection with the slot at the end of the upper quadrant. (See photo 4.1.) Removing the spring makes the lever fairly wobbly, so I added another thin washer under the circlip holding the rod on its pivot. I then set the servo in place and figured it would just fit between the cen-



4.3 A peek inside the cab, showing the small brass angle soldered inside to hold the top rear of the servo.

ter bolt hole and the cab rear. I'd have to forego the rear bolt, but I could extend the center one to hold the servo in place.

The servo has small tabs with rounded slots on each side, so I found a piece of brass tube that just fit in the slots, and a longer bolt to go through the whole thing from under the floor, as shown in photo 4.1. (The brass tube is tight through the holes in the servo mounting tabs.) I cut the servo output arm down to 1 arm and mounted it sticking out sideways. I then fabricated a rod to connect the servo to the reversing lever. It has a brass rod bent a 90° that slips into the servo output arm, and is soldered into a brass tube. The end of the tube is flattened and drilled to fit over the small bolt already in the lever. There's a slight bend, visible in photo 4.2, to clear the end of the lever frame. The bolt in the lever has a blob of solder carefully added to the threads nearest the head to prevent it from screwing too far into the lever. It can't stick out the back as it used to, as we don't want positive engagement in the slots any more! Plus the actuating rod has to be free to move.

This is a location where a spring-fitted rod would ensure the servo pushes the lever to the end and no more. As I mentioned before, check out the R/C car hardware. I didn't think it would be a problem, as the servo crank has several holes, which allow the throw (distance moved by the rod) to be adjusted. And I'm sure the engine doesn't mind if it is firmly 100% in gear. The trim adjustment on the transmitter stick enables some fine-tuning.

To hold the servo down, I initially fabricated a rectangular box from more 1/4" strip and soldered it to the tube that the bolt passes through. The box held the servo in place so I could test it with the transmitter and receiver, as shown in photo 4.2. I then test-fit the cab, and discovered that (a) the servo rear mounting tab was too wide and (b) the brass box prevented the servo from sitting neatly in the corner of the cab. So I cut the rear tab down until it cleared the cab and removed the box. To hold the rear of the servo, I soldered a short piece of brass angle section to the back of the cab, as shown in photo 4.3. Make sure you've cleaned the paint off the cab where the soldering is going to take place, and use a hot soldering iron.

I suspect there is room to add a seat for the driver, as long as you chop of his legs so they don't interfere with the servo. I did consider installing a driver with a 'working arm' attached to the lever, so he would lean forward when the servo pushed it into forward gear, as if he had done it himself! Before you re-install the cab, now would be a good time to repaint that sickly maroon in a decent shade of black, as I did.

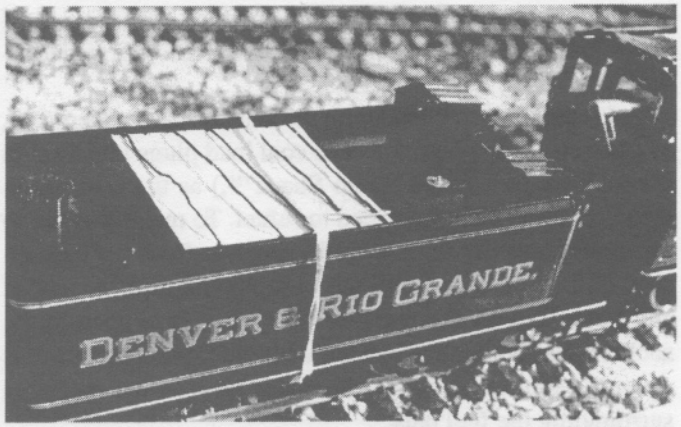
Testing and Antenna Tuning

The loco and tender were re-assembled for a steam test, with the wires from the servos led between the frames and out to the tender sockets. I used a couple of sandwich bag twist wraps to keep them under control for testing, and you can see the colored wires in photo 5.2. While there is little chance of swapping the servo wires and putting one in the wrong side, they do have to be inserted the right way round so the wire colors match. You also have to make sure you have connected the wire extensions to the correct side of the receiver, so check the operation of the servos before you re-attach the tender top.

I briefly mentioned earlier in the tender section that I attached the receiver antenna wire to the chassis, intending to use the track for signal pickup. It didn't work; once I had raised steam and the loco was moving I had no range at all! The transmitter had to be almost touching the tender for any signal to get through without significant glitching. At this point I hadn't heard about metal-to-metal noise so I was a little surprised.

Anyway, I figured using the track as an antenna wasn't a good idea, so I decided to use the same antenna design I had used on my electric locomotives - a flat, non-overlapped coil of wire insulated from the tender. Figure 5.1 shows the first test with a long piece of green wire lying flat on the tender. I tried it stationary and had at least 50' range from across my yard. Then I raised steam and tried it in motion, and while it was better than the first trial, it still wasn't great. Maybe 10' range and lots of glitching.

Hmmm. I was starting to worry, but I decided on one last test. The antenna supplied with the kit was a thin piece of black wire that I had cut off and put aside. I figured maybe it was just the right length for the receiver so I should be using it, not the long piece of green wire I had just tried, so I unwound it and



5.3 Final antenna trials. The strap is there to hold the coal load in place during testing.

hooked it up to the receiver. Before winding it onto the piece of card to make a flat coil, I wedged a long wooden dowel in the back of the tender to hold the antenna upright. It would be totally impractical on the move, but it allowed me to check whether the range was better with the antenna wire straight upright instead of lying flat in a coil. Back out into the yard, and I carefully tested the range with the upright wire, and with the wire coiled flat on the tender, as shown in photo 5.3. There was no difference, so I heaved a sigh of relief.

A couple of days later I put a large elastic band around the tender to hold the coil and coal in place and raised steam again. I wanted to test with the brass plate that had coal on it (shown in photo 2.1) to see if that affected the range and operation. With the band holding everything together, and with the air still and cool, I got some delightful steam effects, as seen in photo 5.4. The glitching was still pretty bad, but I was getting adequate range of at least 20'.

5.4 Test run on a cool afternoon!

This was possibly as good as I was going to get without a better radio system, so I set about putting everything back together. I went looking for some parts at the R/C store, and they told me all about metal-to-metal noise - which confirmed my suspicion that I was stuck with the glitching until I could afford a better radio.

I rebuilt the coal load with the antenna card underneath, as you can see in photo 5.5. The coal load plugs into a small microphone jack (from Radio Shack™,) as the coal has to come off every time you need to refuel. To make it easier to separate the tender floor with the receiver from the tank assembly, I soldered a small tab onto the microphone socket and put a clip on the receiver wire, so it is clipped to the socket when the tank is located with the floor. The socket is up at the top, to be above the water level in the coal area surrounding the fuel tank.

And that's it. Now I have to remove the beautiful Denver and Rio Grande decals on the tender and re-letter it for my EBT layout. I really should have asked Accucraft to build me a version without the pilot, headlight, stack, tool box, etc., as I now have a box full of unused bits!

Bits & Pieces

Several owners have adjusted the spring loading the truck - I haven't, yet. Tom Bowdler indicated he has stretched his a little to provide more downthrust. I've also read of someone adding a centering spring to help it 'pilot' the locomotive into curves.

Tom Burns reported finding a slight ticking noise on his C-16. On the left or fireman's side, the top of the main driving rod was making contact with the underside of the piston rod guide support bracket where it attaches to the piston rod guide beam. The problem was easily resolved with a Dremel™ tool by simply grinding the underside of the support bracket and rounding the bottom edge.

The steam oil reservoir in the air tank is a pain to fill or empty with the syringe supplied. I dug around and found a couple of syringes with long, slim spouts. One is used to suck the condensate (water) from the bottom of the tank after a run, and the other, which has been cut off so that it has a larger hole, is filled with steam oil and used for refilling. I find I get more water out if I wait until the day after a run!

The fall plate between cab and tender on my #42 doesn't seem to be in the right place. It certainly doesn't 'fall' properly! I cut one of the hinge loops and removed it, and I plan to re-mount it lower down so it will work correctly.

I have darkened the silvery spring protecting the gas pipe by dipping it in grimy black paint.

There is one very worthwhile addition to the tender. This locomotive runs on butane (or propane/butane mix, which

seems to work with no problems.) The tank holds quite a lot of liquefied gas, and it gets cold as the butane evaporates. The tender coal area, where the gas tank is mounted, is a perfect place to put warm water - but there is a big hole in front where the gas pipe leads to the loco, and it allows the water to run away.

I tried squirting silicone sealer around the pipe, but it didn't work for long. Then Royce Brademan showed me his solution, which was a 90° fitting from a model airplane fuel tank, made by Tetra. He indicated a small rubber washer was needed to make it watertight.

I had already found a rubber grommet, so I went looking for the fitting. GPA Hobby had none in stock, so I bought a 90° brass water fitting and soldered it to a tube and to the bottom of the fuel valve. [See photo A.2.] Make sure you have a wet heat sink on the valve when you do the soldering. The 90° fitting came with a screw-in pipe nipple, so I found a couple of brass nuts with the right thread and used them to connect a nipple to the end of the 90° fitting after it had been pushed through the grommet. Royce's solution might be a lot easier! Test the pipe by submerging the whole thing in water and turning on the gas.

Addendum:

Accucraft C-16 Running Modifications

Since the live steam C-16s began arriving on our shores earlier this year, there's been quite a lot of correspondence on the internet, describing various features and issues. This is a summary of the items I found needed attention.

Those pesky little nuts and bolts work free, especially those holding the valve chests to the cylinders. (Photo A.3 shows a slight haze obscuring the front of the loco; that haze is steam leaking from the valve chests.) Check for tightness regularly, and check the rest of the motion for loose fastenings when you oil it.

I mentioned the issue of small nuts and bolts needing a set of tools. Someone suggested using Allen-head screws for sockets, and they apparently work very well.

The front pilot truck has been the topic of much discussion. This is a long locomotive and the pilot is quite long, so any uneven track [yes, even yours] causes the pilot wheels to rub and bind on the frame. Worse than that, on some earlier models the bushes for the pilot axle can slip out of the slots in the casting, letting the wheels wander all over the place. While my bearings didn't slip out, they were rotating in the slots instead of staying still and letting the axle rotate inside them.

There are three suggested modifications:

1. To make the bearings stay where they are supposed to be, I wound a small loop of copper wire around the bearing, twisted the ends into the slot, and added a blob of solder to the twist. The photo shows this addition. The bearings are still quite loose, but they can't rotate and won't fall out of the slots.

2. I relieved the tops of the pilot truck frame springs, which are cast into the truck and stick up above the frame. You'll probably find yours look a bit shiny after a few runs, because they rub on the main frame members above.

3. I also smoothed the sides of the frames where the wheels may contact them as the truck swings on that uneven track. The frame's lower edge is a sharp right angle, so I filed it slightly rounded to reduce binding.

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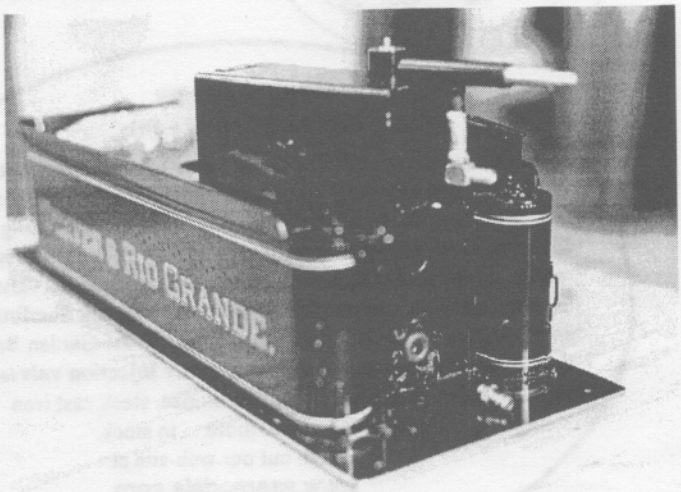
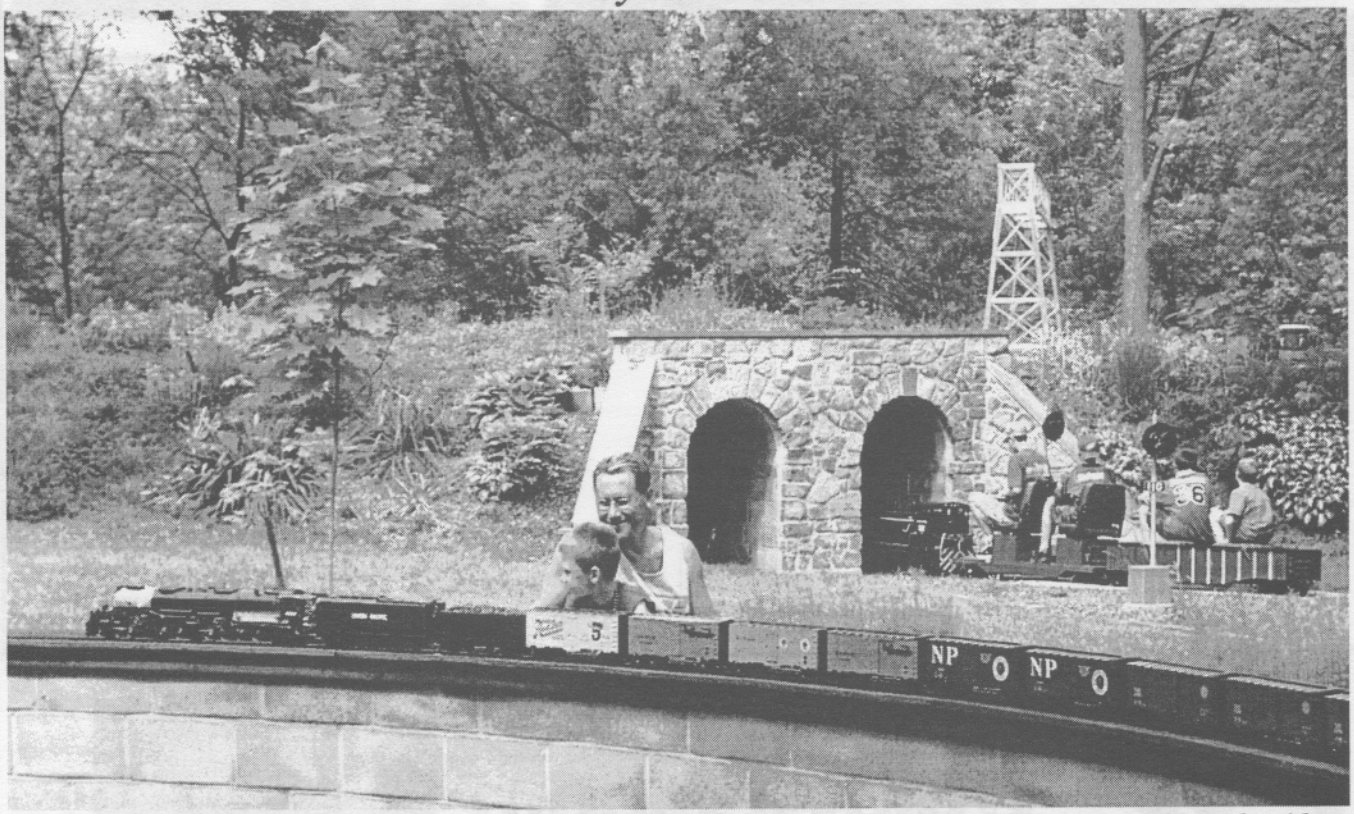


A-2 Note modifications to the tender. See text for details.

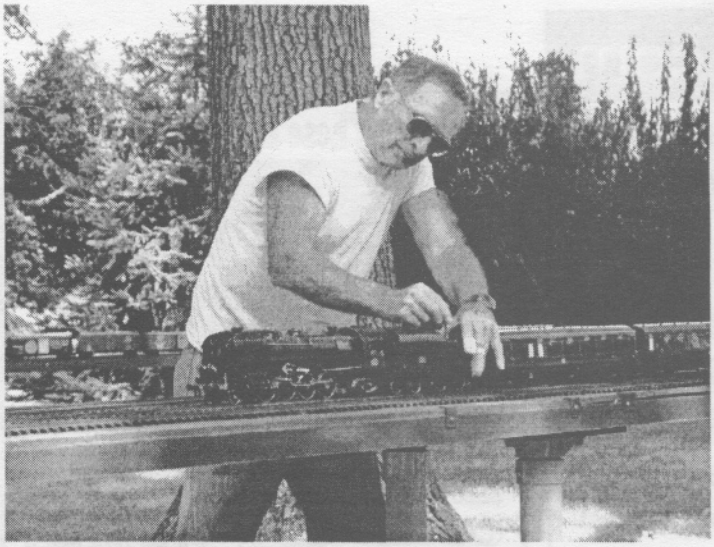
STEAM SCENE

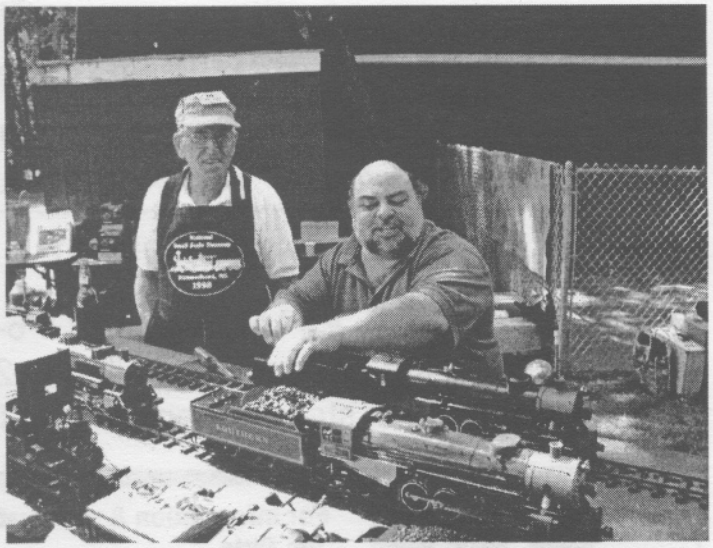
photos on this page were taken at the Pennsylvania Live Steamers Memorial Day meet in 2002
by Marie Brown



Father and son share the wonder as an Aster Big Boy thunders past with a heavy freight train. Note the riders on the 7.25" gauge entering the tunnel at the rear of this photo. The PLS club site has something for everyone!

Jerry Reshew (Mr. Diamondhead) prepares his train for a run on the PLS gauge one track. It must feel good to Jerry to just come to a steamup and enjoy running trains and socializing with fellow steamers!





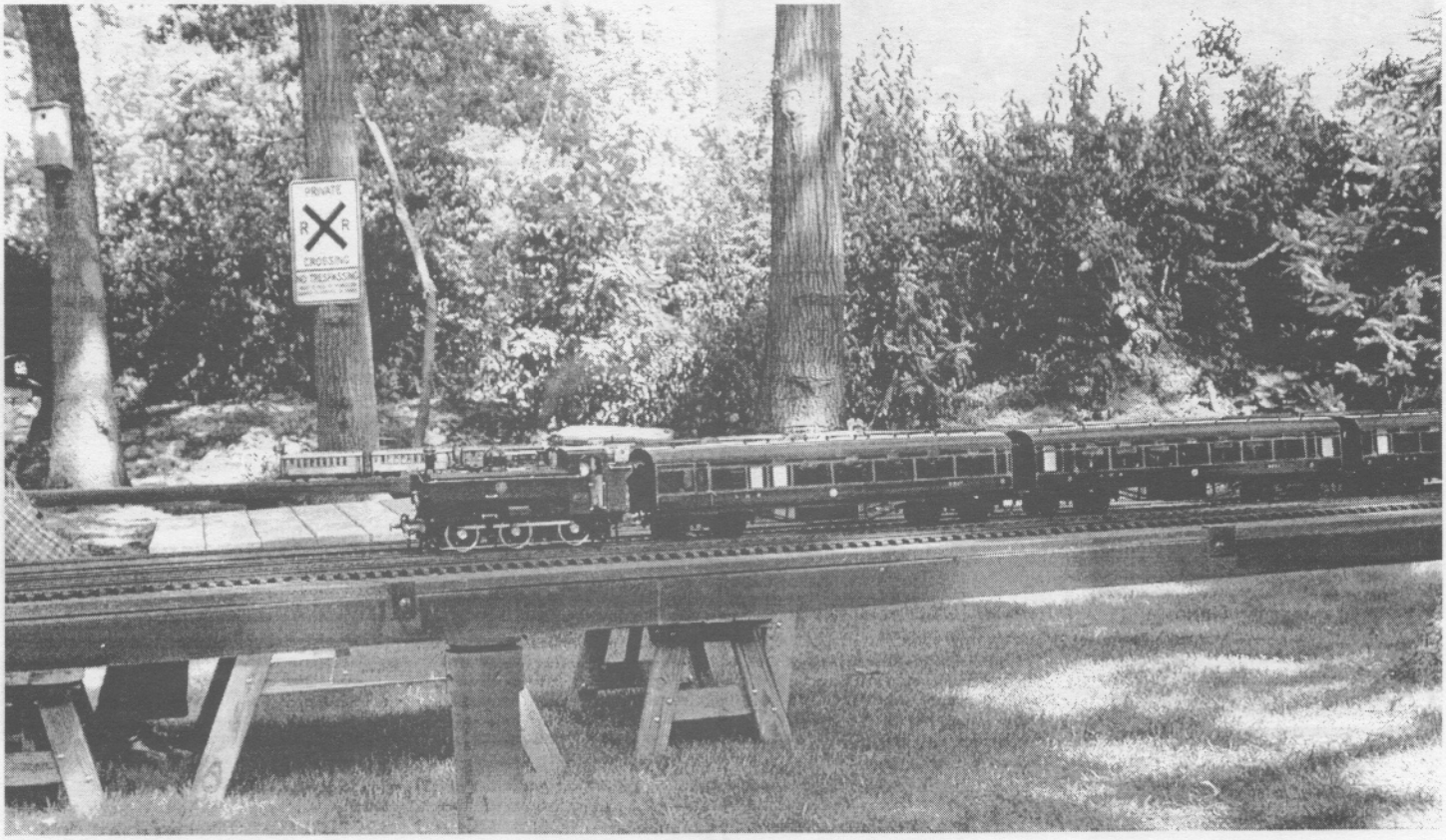
All photos on this page were taken at Robert Hekemian's steamup in the fall of 2001 by Marie Brown

Clockwise from above: Mike Torre (CT) prepares his Aster Mikado while Walt Swartz (FL) looks on.

Mike Torre's Aster Pannier with a rake of coaches blasts past on the mainline.

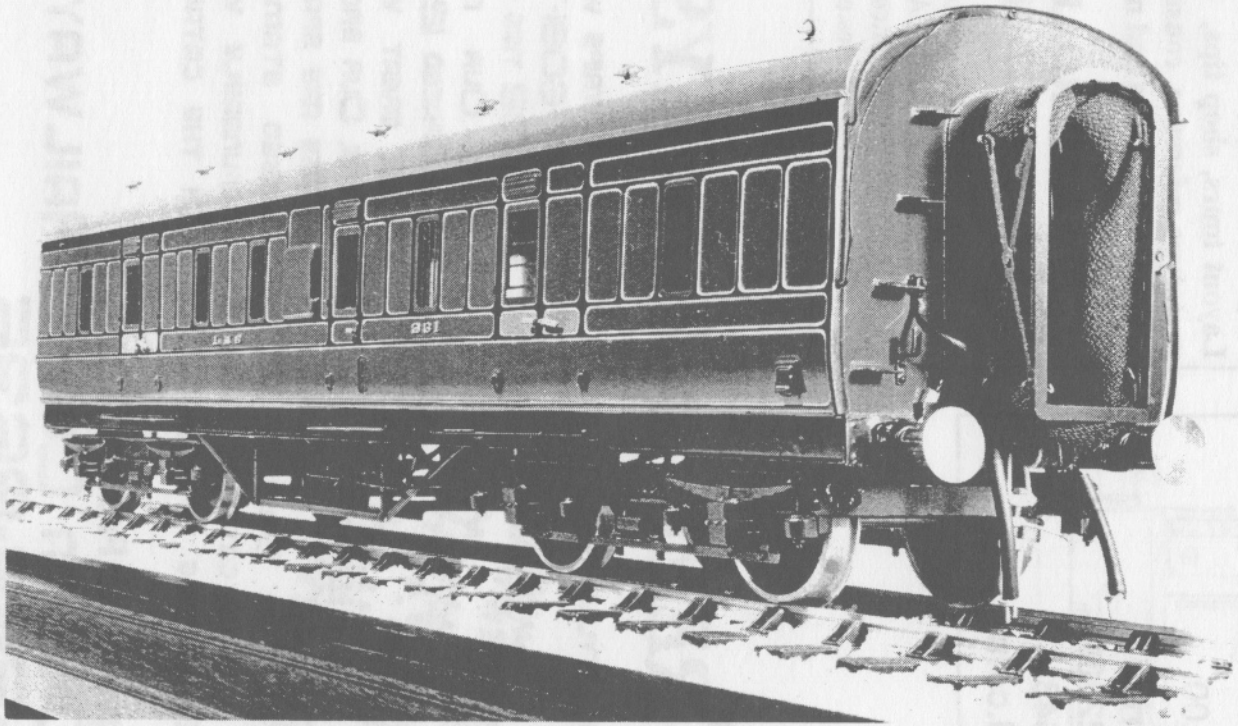
Jim Curry (ME) paces his beautiful SP Daylight at speed.

Paul Quirk (PA) pumps in some water during a run.



L. M. S. Period Piece...

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



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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**

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SWAP SHOP

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For Sale: Aster C&S 2-6-0 #22 complete. Includes instruction manuals, original box, spare screws, washers, gaskets, O-rings, steam oil, etc. Has been run only on demineralized water. Very good condition. $2750.00 includes shipping in U.S.A. Dave Wallace, days 210-226-3196, evenings and weekends 210-826-7974. (64)

For Sale: **(1)** USRA Mikado [black] fitted with axle and hand pumps. Excellent runner and steamed twice only. US$4030. Shipping is included to US address. **(2)** Spring/Fulgerex, Maffei Pacific 4-6-2 gas fired, green livery, an unusual and quite rare model of terrific appearance. US$4500. Contact: Gordon Watson.ph/fax 61 359 686573 or E-mail: argyleloco@fhills.hotkey.net.au (64)

For Sale: **(1)** Aster Reno 4-4-0 (alcohol fired) $2500.00. **(2)** Aster/LGB Frank S. (butane fired) $1400.00. Both are excellent runners, low hours, excellent condition. Both have wooden carrying cases. Prices do not include shipping. Leonard Delvey, 6450 Abisco Rd., Cocoa, FL 32927 • (321) 633-6903 (65)

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END OF THE LINE

Good News!

In this issue we are pleased to welcome Chuck Walters as a regular contributor. As a result of reader feedback, Chuck will host a regular column for those who have just found the live steam hobby and need some guidance, information and direction. We've met a lot of wonderful people in this hobby, but we've never met anyone more enthusiastic and totally immersed in the live steam hobby than Chuck. So...who better to help the newcomers to the hobby?

And to you seasoned, grizzled veterans...don't pass up Chuck's column just because you no longer consider yourself a beginner! There are pearls of knowledge and wisdom for all of us in there.

Any of our readers...beginner or veteran...can send questions or topics you would like to see covered in Chuck's column to us here at the magazine via e-mail or snail mail. Please note that it's for Chuck and we will pass it on to him.

And now for the.....

Bad News

We haven't had a price increase since issue № 31, way back in 1995. During that time the USPS has had several price increases, and we have gritted our teeth and absorbed them ourselves. The cost of printing has also increased more than once during that time, and we've absorbed those as well.

Now the USPS has given us word of the latest increase, and we just can't absorb any more. So, beginning with issue #66, the cost of a subscription and the cost of back issues will increase. Sorry, but if we are to stay in business there just isn't any other way, other than discontinuing publication of a printed magazine and following the trend to publishing an internet based magazine.

As always, we are interested in your feedback. Please let us know what you think.

And Finally...

Faithful Assistant and your steam oil stained editor have already begun our steamup season here in the northeast by attending steamups in New York and Pennsylvania. We hope that all of you have a calendar as full as our own, with many opportunities to boil water with your fellow live steamers this season. Enjoy!

Happy steaming,

Ron

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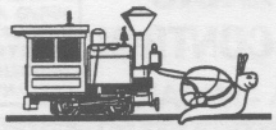

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Photos, clockwise from top left: Rich Goodin's DJB Climax rattles past on Chuck Walters' elevated line, leaving a nice steam plume.

photo by Chuck Walters

Dick Mundy's Lady Anne exits the tunnel at Busseau and heads for the 5% incline up to Aufferville Station.

photo by Dick Mundy

Tony Hall-Patch has 'Americanized' this Aster Japanese C62 4-6-4. The changes are both mechanical and cosmetic, and include a conversion to spirit firing for longer runs. Radio control has been fitted to operate the regulator, blower, reverser and bypass. Tony adds that the loco looks very good with J&M American stock, and will comfortably pull a 7 coach consist.

photo by Tony Hall-Patch

Dominique Osaka really getting down to it on Dick Mundy's garden line in France (see the steamup report in this issue). In the background is a rake of bulk wine carriers built in 1999 by Dick, who also took this photo.