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Nº 57

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STEAM IN THE GARDEN

with Steam on the Pond

Vol. 11, N° 3
Issue N° 57

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FRONT COVER: On a cold winter day the fireman and engineer are grateful for the warm, cheerful blaze of the coal fire in their loco's belly.

photo by Jim Pitts

INSIDE REAR COVER: B&O No 4500 simmers on the turntable, waiting for a clear track. The Mikado is by Aster, and the turntable and gauge 1 track are part of the Pennsylvania Live Steamers club grounds. The PLS site includes all scales and gauge, and is one of the finest and most "user friendly" club sites in the country.

photo by Paul Quirk

2000 - 2001 CALENDAR OF EVENTS

(H)ouston (S)mall (S)cale (L)ive (S)teamers meet the third weekend of every month when there isn't a National Meeting held. If there is no other venue, the HSSLS meets on rotating Saturdays and Sundays at the home of Jim Crabb in Seabrook (Houston), Texas. Please call 281-474-5654 or email <saltycrabb@aol.com> for specifics and directions.

January 12 - 14, 2001 - International Small-Scale Steamup, Diamondhead, Mississippi, USA. Don't miss this one....it's the biggest miniature steam railroad convention in the world! Three elevated tracks to accommodate gauge 1, gauge 0 and HO steamers - Clinics - Round the clock steaming - Dealer room - Steamboats and more. Attendees from around the globe! The Clack Valves and Cornets Steam Band will be back by popular demand, and we expect quite a few more foreign guests - more international flavor. Make your reservations now so you don't miss out. Contact Jerry Reshew, 5411 Diamondhead Drive East, Diamondhead MS 39525. Phone (228) 255-1747, e-mail: jreshew@mindspring.com.

February 17 - 19, 2001 - 4th Annual Meet at Steamtown National Historic Site in Scranton, PA. There will be two large layouts 24' x 50', one for live steam and one for electric. For more info call Clem O'Jevich at 570-735-5570 or email at wrunloco@aol.com.

May 4-6, 2001 - Midwest Small Scale Steamup, to be held at the Holiday Inn Select Holidome, St. Peters, Missouri. For information contact Diana Eaton, 504 Coldstream Ct., St. Peters, MO 63376 - Phone: 636-978-0725 - E-mail: deaton02@mail.win.org

July 7 & 8, 2001 - Garden Railway Weekend in Syracuse, New York, presented by the Central New York Large-Scale Railway Society. Garden layout tours, live steam clinics & demonstrations, modular layout, dealers, custom builders, manufacturers and lots more. For information packet contact CNY Large-Scale Railway Society, 315 Viking Place, Liverpool NY 13008 • e-mail gdavis4@twcny.rr.com.

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

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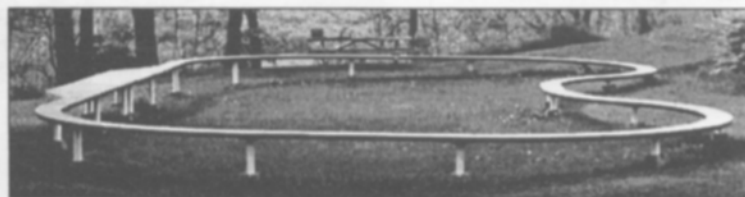
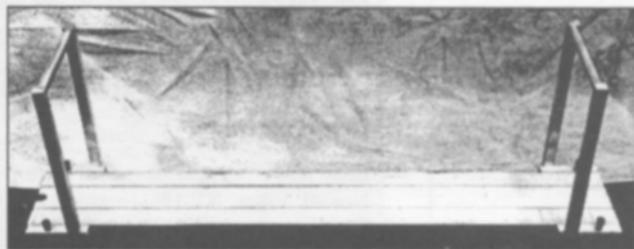
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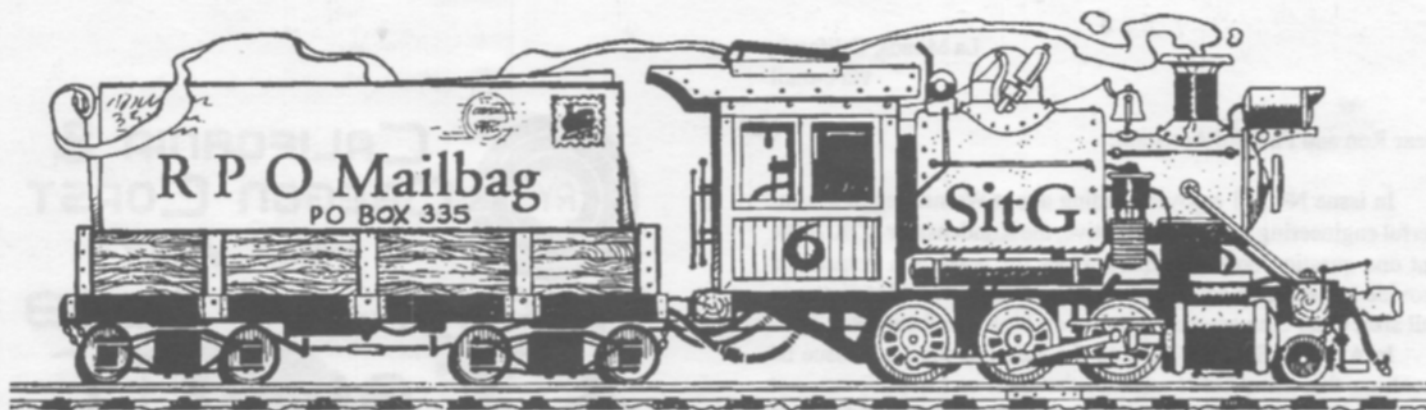
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Letters from readers are welcomed and encouraged. Offer advice, encouragement, suggestions or constructive criticism. Tell us about your current project (and don't forget the photos!) or just share live steam experiences. But please keep your letters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

via e-mail

Editor;

On Friday July 15th an era ended, Harry and Paul Quirk parted with the portable track that had introduced gauge 1 live steam to so many here in the North East. For over fifteen years the track was set up whenever an opportunity presented itself and its last two outings were typical, being to the Cabin Fever Expo in Leesport, PA and Steam Town in Scranton, PA.

The track has been taken to Atlanta by Hank Peacock and James Ritson. They hope to be as successful in developing local interest in small scale live steam as have been Harry and Paul.

Many of us in the North East owe a debt to the Quirks, invariably generous with their track, their time and their help. We are fortunate they have passed the torch to Mike Moore, a person of similar generosity, who is intending to make his portable track available at as many events in the North East area as his busy work schedule will permit. Already his track has appeared at the Pennsylvania Live Steamers Memorial Weekend and the Tuckahoe Steam and Gas Engine Show in Maryland.

San Jose, California
via e-mail

Dear Ron,

I read with interest Murray Wilson's article "Kitless Boat

Building" in SitG issue N° 56. I recommend that anyone who is interested in the use of cardboard as a hull material should take a look at Weston Farmer's *From My Old Boat Shop* (International Marine Publishing Co., Camden, Maine, 1979).

Farmer advocates the use of 'floatational models' to check out proposed hull designs. His book contains detailed instructions on the use of cardboard and balsa wood to construct scale models of boat hulls. The hulls can then be used to determine experimentally how closely a hull floated to its designed trim and to envision correctly the finished hull in three dimensions. The basic materials that Farmer uses are 1/16" photo mounting board, balsa, Duco cement, and spar varnish as a sealer. Some of the prices that Farmer quotes for materials are a little dated.

In his SitG article Murray Wilson describes the use of shellac as a sealer. Shellac is not really waterproof, but it is easy to apply and to clean up because it dissolves in alcohol. I would recommend the use of a modern furniture or floor varnish as a sealer for a boat hull because it will dry hard and is more waterproof than shellac. Farmer recommends spar varnish, but spar varnish does not dry hard. Venturesome builders could try some of the low-viscosity epoxies that have been developed for full-scale laminated-wood boat construction.

Farmer has a lot more to say about the use of floatational models. He describes how hull speeds and wave making characteristics are proportional to full-scale designs based on a given hull's scale ratio. For example, if 3/4" scale is used, which is also a 1:16 scale ratio, then the hull will behave the same as the full scale prototype when it is moving through the water at a speed that is the square root of the scale ratio, or one fourth (square root of 16), times the speed of the prototype. Displacement will scale by the cube of 16, or 4096.

Weston Farmer writes with wit and offers many pithy comments about the business of boat design, as well as a lot of practical insight into design itself. Farmer designed the prototype of the 'Diana' steam launch model that is advertised by Bay-Com on page 35 of SitG issue N° 56. I recommend *From My Old Boat Shop* to anyone who likes to design and build small boats, whether they are models or full-scale.

Regards,
Steve Shyvers

La Mirada, California
via e-mail

Dear Ron and Faithful Assistant,

In issue N° 56 I enjoyed reading about Werner Jeggli's wonderful engineering project locomotive, the Kondensator LOK 2000, but one question comes to mind. Does the pendulum suspension provide any running advantages in gauge one, or for that matter in full size, other than creature comfort on high speed curves?

In Alvin L. Sadler's letter to the editor in the same issue he mentions that his effort to enhance the chuff on his Ruby was not very effective. I have found that the most effective way to do this is by providing a 3/8" to 1/2" break in the blast pipe. A large area of communication between the blast pipe and smoke box allows the smoke box to act as a resonator, enhancing and lowering the blast pitch.

Kevin O'Connor came up with a clever way to do this by removing material on each side of the blast pipe, effectively making back to back slots, leaving just two slender supports in the tube, (see SitG issue N° 54, p. 27). To further increase the effect, a restrictor in the lower portion of the tube that is about 10% of the engine cylinder diameter will sharpen up the exhaust report.

Best regards,
Larry Bangham



Les lecteurs francophones peuvent contacter Guy Ozanne pour obtenir, gratuitement, une traduction sur un élément de texte paru dans SitG. 41 rue Jeanne d'Arc, 94.500 Champigny, France; tél (33) 01-48-83-62-86; e-mail <Guy.Ozanne@wanadoo.fr>

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frame, deck, Johnson bar, couplers, stake pocket (to support roof).

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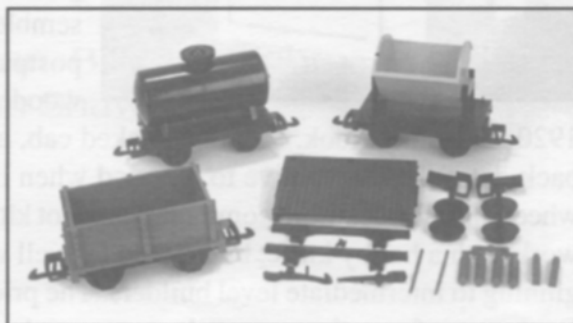
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What's New?



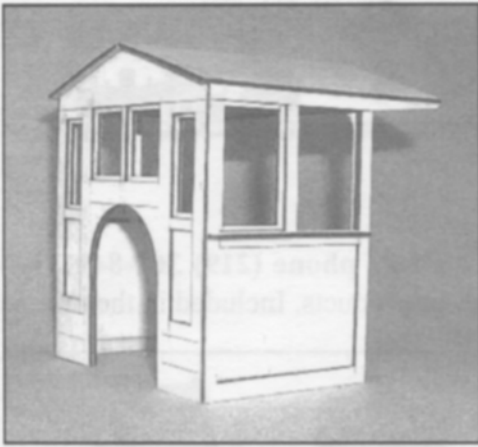
Hartland Locomotive Works, PO Box 1743, Dept. SitG, La Porte IN 46350 - phone (219) 362-8411, has released a set of four G-scale cars in their Make & Take and Mini Series lines of products. Included in the release are a #15010 Gondola, a #15000 Flat Car, #15020 Ore Car and #15030 Tank Car. These easy to assemble 4-wheel car kits are made of weather and UV resistant materials for long life outdoors and are available in kit form at prices from \$9.95 to \$13.29. The RTR cars come painted in several road names and are prices from \$17.95 to \$19.95. Low price, durability and ease of assembly make these a fine choice for youngsters, or for anyone looking for tough, inexpensive, kitbashing projects and easily transportable rolling stock for their garden line..or for steamups. Contact your favorite SitG advertiser for more info or to place your order. If your dealer doesn't carry Hartland products, contact HLW direct at the address or phone number listed above. Please let them know that you saw it in SitG.



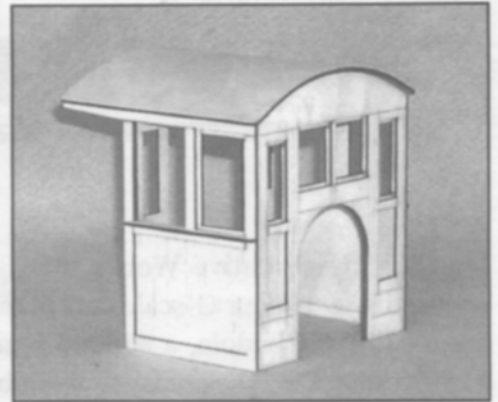
Virtual Trainz around the bend - Brisbane, Australia - September 15, 2000 - Auran, an interactive software and games company, announced today that it is developing a new interactive software title, **Trainz**, for release in 2001. The software allows users to collect and use virtual model trains in a Sim-style 3D world. Trainz replicates the traditional model train collecting experience, on the computer. Initially, Auran is creating realistic 3D models of diesel and electric trains from the 1950s onwards. Collectors are able to layout tracks and drive their own models from cab view or third person perspective. As the project progresses, collectors will be able to virtually maintain locos and rolling stock, manage the rail system including shunting, dispatching and run their layouts with other collectors via the Internet. **The project will expand to include steam**, earlier diesel models and modern high speed trains. Auran CEO, Greg Lane said, "I've wanted to make a model train simulation for the past five years but the technology just wasn't there to do it back then. But now with AURAN Jet and the advent of high speed Internet connections, the possibilities are endless." Train and rail software has been eagerly awaited by model train collectors internationally. There are already a large number of fans chatting on Auran's Trainz Web site (<http://www.virtualtrainz.com>). The Trainz community is actually helping to develop the product, including creating wishlists for favourite models to be released first. AURAN Jet(tm) is a trademark of Auran Holdings Pty Ltd and Harn Bloodline(tm) is a trademark of Auran Games Pty Ltd.

Hey, all you kitbashers & scratchbuilders - Michael Zemek, 1908 Edgewater Drive, Friendswood, Texas 77546 - phone (281) 993-0302 ● e-mail mzemek@wtez.net - has Shay parts for sale. Boiler set includes: Cheddar custom vertical boiler, sight glass, pressure gauge, Roundhouse throttle, Goodall valve, check valve, ceramic burner, gas tank, gas line & lubricator. Truck set includes: Sierra Valley 26" wheels and axles, 4:1 gear set, left journal castings, right journal castings, bolster end caps castings & u-joint castings. Frame set includes: frame, deck, Johnson bar, couplers, stake pocket (to support roof).

NEW CUSTOMIZING PRODUCTS FOR ACCUCRAFT'S RUBY! FH&PB Railroad Supply is offering two new products for customizing Accucraft's entry-level live steam loco Ruby. These laser-cut kits allow Ruby



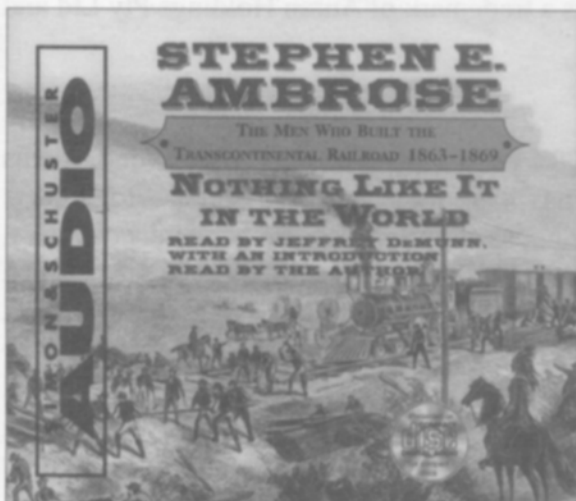
owners to create a new look for their locos with minimal time and money invested. The first new kit is a peaked-roof wood cab, commonly used on locomotives before 1900. It is a drop-on replacement for the original metal cab. The kit is precision-cut and requires only glue, sandpaper and paint to assemble. The price of the kit is \$45, postpaid. The second kit gives a



1920 'old-timer' look. Like the peaked cab, addition of the wooden pilot back-dates the locomotive to a period when link-and-pin couplers and 4-wheel rolling stock were common. The pilot kit requires some simple wood-work with a hobby knife, but should be well within the capabilities of beginning to intermediate level builders. The price of the kit is \$20, postpaid. For more information, or to place your order, contact: FlintHills & Permian Basin RAILROAD SUPPLY CO., 6933 Cherry Hills Loop NE, Albuquerque, NM 87111 ● e-mail: vrbase@nmia.com ● web site: <http://www.nmia.com/~vrbase/fhpb/>

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David Hamilton, O.S. Engines Dealer from The Engine Shed, Kincardine Canada, while visiting in SW Florida in late July, met with **Bob, Fran & Rob Osterhoudt of Rio-Pecos** to discuss O.S. sales. David also got some "hands-on" experience steaming the O.S. Krauss and O.S. Koppel on Rob Osterhoudt's Whispering Pines Railroad. David brought his Accucraft Ruby and steamed it on the Rio-Pecos Railroad, and at Walt Swartz's Swamp Railroad in Naples, Florida.



Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020 ● phone: 212-698-7126 - fax: 212-698-7664 have introduced an audiobook titled, **NOTHING LIKE IT IN THE WORLD**, written by Stephen E. Ambrose and read Jeffrey DeMunn. Consisting of six audio CD's and with a duration of 6.5 hours, **NOTHING LIKE IT IN THE WORLD** is the story of the men who built the transcontinental railroad, 1863-1869. This was an unprecedented feat of engineering, vision and courage. The Author and narrator do a wonderful job of bringing the story to life for the listener. The suggested retail price is This audiobook makes a perfect Christmas gift, and will also make an excellent traveling companion. Contact the publishers or your favorite book-seller for more information or to place your order.

Coal firing - A Burning Question!

By Jim Pitts

In consultation with John Coughran, Bill Courtright,
Yves Guillaume and John Shawe

The pungent smell and plume of coal smoke, the glow of a firebox radiating from a miniature locomotive, combine to form the ultimate re-creation portraying all the beauty and brute strength of real railroading. From high iron main lines to short lines with grass covered rails, coal fired steam locomotives once were the norm.

Coal was the energy that fueled the fires of the industrial revolution. These magnificent machines literally breathed and left a trail of smoke and cinders across the land. The remembered image of a coal-fired locomotive was an opportunity I wanted to re-create and experience.

Small-scale live steam locomotives present a variety of chal-

lenges in both construction and operation. I am confident that among the many motivations that attract persons to this hobby is the opportunity to resolve a variety of engineering questions. When friends ask if I run trains, I respond that usually I spend more time doing maintenance on them than 'chasing them.' I like a 'hands-on' hobby that is unique and offers a supportive network of enthusiasts.

For more than two decades I have operated Gauge 1 locomotives that are fueled by either alcohol/methanol or butane gas. Both traditional fuels have their strengths and supporters. However, always lurking in my mind was the possibility of operating a Gauge 1 coal fired locomotive.



Building a fire on a fall afternoon, Jim Pitts of Travelers Rest, SC steadies his hand as he begins to shovel charcoal in the firebox of his Roundhouse/Shawe SR&RL #24. Real wood charcoal soaked in lamp oil provides the base for a coal fire.



John Shawe, a UK locomotive builder, demonstrates the fine art of coal firing on a converted 2-4-0 JUMBO. Aster Hobby originally produced this LMS crimson red model as an alcohol burner. Shawe Steam Services specializes in custom built as well as coal fired conversions.

At the annual reunion of small-scale live steamers at Diamondhead, Mississippi, I have admired the occasional locomotive that is coal fired. Several years back, Richard Finlayson had on display the prototype for a coal fired Climax-type locomotive being developed by Legend Steam Locomotives.

Learning of my immediate enthusiasm to experience coal firing first hand, Richard helped me to obtain a Roundhouse SR&RL 24 locomotive converted into a coal burner by Shawe Steam Services. In conversation with John Shawe, I learned that this unit was the first of what is now a dozen Roundhouse/Shawe SR&RL 24's 'e' has transformed to coal firing.

Boiling water in a Gauge 1 coal fired locomotive has presented several challenges. They include: obtaining the proper charcoal; identifying the appropriate lighter fuel; locating a source for coal; and discovering the appropriate technique for building and maintaining a coal fire.

Naturally, these are questions that are not discussed in contemporary popular culture. Such basic, if not primitive, knowledge has become limited. However, I am hopeful that the coal-fired segment in small-scale live steam will experience growth, especially as additional locomotives are made available. The coal-fired crowd will probably not dominate the hobby, but as a friend quipped, "they will certainly make a stink!"

The ingredients to recreate in Gauge 1 'a coal fired experience' include the following essential elements: a locomotive capable of burning coal, the appropriate fuel and an understanding of the basic techniques to both build and maintain a fire.

A Coal Fired Locomotive

First consideration is the locomotive. Our counterparts in the United Kingdom long ago proved that it is not only possible, but also encouraged coal fired locomotives. They were advocates not of mere models, but real miniature locomotives that were realistic and really burned coal. The challenge was to create a locomotive that was efficient and economical.

John Shawe relates that Curly Lawrence (writing under the pseudonym LBSC) is the obvious pioneer and really the "Grandfather" of small coal fired engines. He started writing for *Model Engineer* magazine in the early twenties, mainly describing 2.1/2" gauge engines and proving that such machines could pull live passengers. He also described Gauge 1 and Gauge 0 coal fired engines.

H. P. Jackson of York also produced some early coal fired Gauge 1 locomotives. These were mainly British prototypes, built to a very high standard of modeling. H. P. Jackson's work started

in the late twenties or early thirties. John Shawe's father has a Gauge 1 North Eastern 0-6-0 that Jackson built around 1942. When John was about 8 years old, this particular locomotive became his inspiration for coal firing.

John Shawe states "No history of Gauge 1 coal firing is complete without mention of these two pioneers: Curly Lawrence and H. P. Jackson. There were others, but I think they were the most prolific. It is probably true that without Curly the hobby as we know it would not exist."

Today, both John Barrett and John Shawe are actively involved in producing coal-fired locomotives. Barrett Engineering offers several ready to run coal-fired locomotives. Current productions include: BR 4-6-2 Britannia and SR Merchant Navy/W Country. An LMS 2-6-0+0-6-2 'Garratt' will be available Winter 2000. An LMS 4-6-2 'Princess' and LMS 4-6-2 'Duchess' will be available Spring 2001.

Shawe Steam Services also offers a wide range coal fired engines. Many are conversions of either Aster or Roundhouse products. This past January (2000) at the International Small Scale Steamup in Diamondhead, Mississippi (see *Calendar of Events for more information on this event for 2001*) he demonstrated his craftsmanship by operating an Aster 'Jumbo' that he had converted to coal firing.

Presently, John is transforming an Aster USRA Mikado into a coal burning locomotive. With its bulk and boiler, the Mikado is a natural candidate for coal. Its inaugural North American debut will be in Diamondhead, Mississippi during the 2001 International Small Scale Steam up.

Shawe / Roundhouse coal fired locomotives include: 'Ace' (Lynton and Barnstaple 2-6-2T), 'Atlantic' (Argyle 0-6-2T), 'Black Adder' (Fowler 0-6-2), 'Helga William' 0-4-0, 'Jack' saddle tank, and the Sandy River and Rangeley Lakes #24 (2-6-2). Most are available with either manual or radio control.

Aster Hobby Company occasionally produces a locomotive that can be fired by either butane gas or coal. The butane burner is removed and the operator inserts grates into the fire-box. Locomotives offering this feature include: JNR C62, UP

Big Boy, SNCF 232U1, and the Beyer Garratt AD-60.

Aster's forthcoming C&O Allegheny promises both gas and coal firing.

Building a Fire

Once the appropriate locomotive is secured, then it's time to boil water the old fashioned way. The basic ingredients include: steam distilled water (Aster cautions that 'deionized' water

can damage boiler seams that are soldered), steam oil, 'real wood' charcoal, lighter fluid and coal.

First I inspect the locomotive, tighten fittings and lubricate the axle pump, wheel bearings, side rods, cross heads, etc. Then, I fill the boiler and tender with water. Be sure to leave enough room in the boiler for the creation of steam. Next, I fill the lubricator with steam oil.

In preparation for firing, I have broken the charcoal into small pieces and soaked them in a lighter fluid. The charcoal should be real wood charcoal, not compressed sawdust with a glue binder as used in briquettes for the barbeque grill.

Real wood charcoal can be obtained at grocery stores that cater to the gourmet cooks. Another ready source for charcoal that is already sized properly in granulated pieces is from Garden Shops. Scotts' brand charcoal in 2 lb. bags for potting plants is excellent. This avoids the dirty job of processing the charcoal into small pieces.

To facilitate lighting, the charcoal should be pre-soaked in lighter fluid. Some small-scale engineers use alcohol. If this is your choice, be careful not to transfer your flame back to your charcoal source with your shovel. Others use a less

volatile lighter, such as charcoal lighter fluid or kerosene. However, I have found that these fuels leave an oily residue.

John Shawe advised that I use 'paraffin'. After obtaining paraffin wax, like that used in sealing jelly jars, I realized that he was speaking of something different. I learned that paraffin in the UK means 'lamp oil'. Lamp oil is available in better gift shops and hardware stores. An ultra-pure smokeless and odorless Candle and Lamp Oil that is 99% pure liquid wax paraffin



The unofficial dean of the coal firing fraternity, Yves Guillaume of Trinidad, West Indies, demonstrates to Kattachan Tanabe, of Japan and Mississippi, his experienced technique for coal firing. Each of the Aster locomotives in Yves' extensive collection is fueled on a "cocktail" of hard charcoal, anthracite and bituminous (smoking) coal.

is manufactured by Lamplight Farms. Following Shawe's recommendation, I have found lamp oil or 'paraffin' to be the preferred wetting agent.

Charcoal that has been soaked in lamp oil should be shoveled into the firebox until it reaches the bottom of the fire door. Then, it should be ignited. Immediately, close the fire door and place an external (battery powered) suction fan on the smoke stack to create a draft. Bill Courtright's technique is to start the electric draft and then light the fire.

While the fire is beginning to build, load the tender with coal.

Welsh Coal

Obtaining a source for Welsh Steam Coal on the American side of the Atlantic is a challenge. Ron Brown, editor of *Steam in the Garden*, had coal shipped to me from New York. This was reported to be Pennsylvania Anthracite. Beautiful grains of coal, water washed and still wet inside a 20 lb. plastic bag. After drying in the summer sun, I find that it crackled and popped, but when

it burned it left large clinkers that clogged the fire grates. Other coal sources were sampled. With hammer in hand, the black diamonds were cracked and sifted. Still the fire was not as efficient as I desired.

Finally, seeking the assistance of a veteran live steamer, both a 7.1/2" gauge operator and Gauge 1 dealer, Bob Moser (*North Jersey Live Steam*) delivered to me a lifetime supply of genuine Welsh Steam Coal. Unfortunately, the size was that of acorns, so again I was back to breaking and sifting coal to grain size. My preference is for grains approximating an adult's small fingernail. Welsh Steam Coal is the fuel of choice for small-scale steam fireboxes.

To locate Welsh Steam Coal for Gauge 1 locomotives, contact a local 7.1/2" gauge steam club for 'ride-on' steam locomotive enthusiasts. Among the stateside suppliers is Reel EFX, Inc., which supplies Dr. Clinker's Welsh Coal in bean or small nut size. In the United Kingdom, a supplier for Welsh Dry Steam Coal in grains or beans suitable for small coal fired locomotives is Signal Fuels.

Since beginning my research, Paul Trevaskis of Rishon Locomotives has supplied me with a small quantity of Australian Char to check out as a source for fuel. This fuel also offers promise for Gauge 1 firing. However, Bill Courtright says emphatically "there is no substitute that measures up to genuine Welsh coal."

Back to the Fire

Back to the fire! As a bed of charcoal is established, gradually begin adding coal to the fire. As the coal begins to ignite, add more. Once the pressure gauge registers 20 psi, turn on the locomotive's steam blower and remove the external (battery powered) suction fan. Keep the fire door closed other than when shoveling in coal.

Continue to add coal, a little bit at a time, making sure that it is level in the fire box, covering the corners, so as not to create a hole in the fire. A thin fire or one with a hole in the bed of coals allows air to

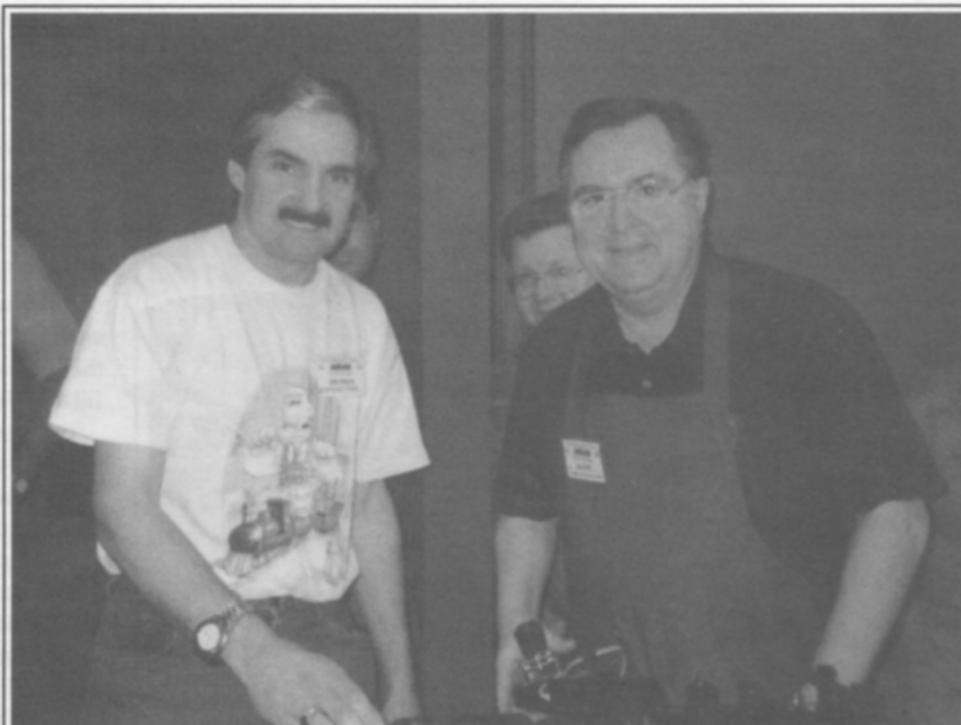
push through and the fire dies. Efficient coal burning locomotives are designed with a deep grate. Keeping the fire as far up as the fire door helps prevent a hole in the bed of coals.

A coal fire burns very hot, so you will need to continue to monitor the water level. Until the locomotive is underway and the axle pump activated, you will want to manually pump water into the boiler. During the run, the axle pump and water bypass valve will need to be adjusted to match the locomotive load. On operating the axle-driven water pump some say either have the pump on or off, and trying to adjust midway is a waste of time!

The blower can be reduced if not completely cut off depending on the speed of the engine. However, when the locomotive comes to a stop, the blower should be open.

Until one learns the particular characteristics of a locomotive, coal firing requires more hands-on attention than gas or alcohol. There is a rhythm of understanding and interaction between the operator and the locomotive.

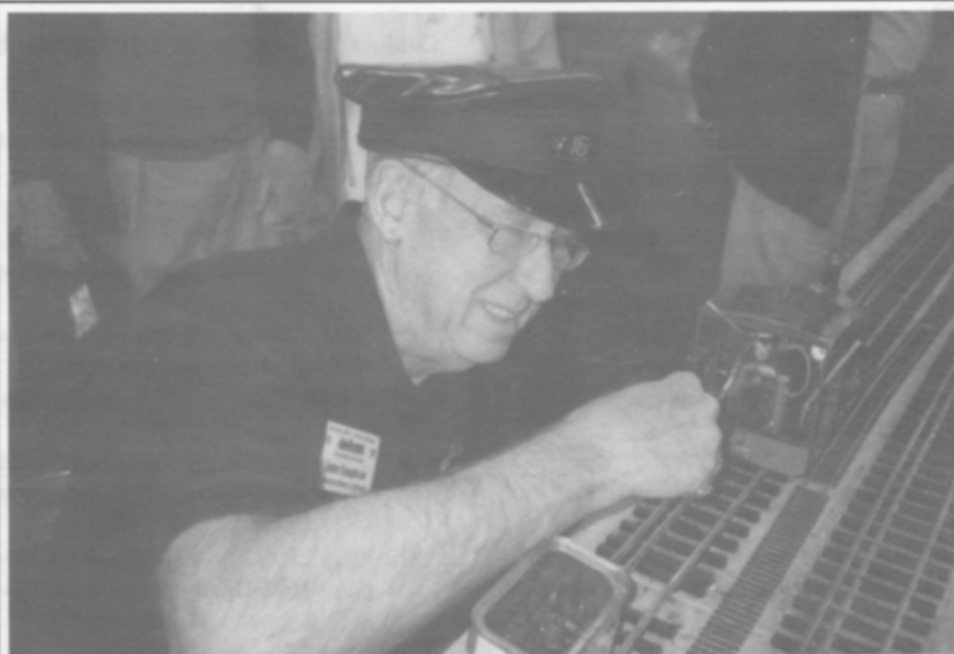
Yves Guillaume has found over the years that his all-Aster collection of coal burning locomotives operate very satis-



John Shawe (left) and Jim Pitts (right) first met in Diamondhead, MS at the International Steamup. John has served as the teacher / coach for many coal firing enthusiasts. Come January 2001, Jim will take delivery of an Aster USRA Light Mikado that is presently being converted to a coal burner.

factorily on a mixture, or 'cocktail' as he calls it, of hard charcoal, anthracite and bituminous (smoking) coal. For example, when operating his SNCF 232 UI Locomotive, after a good fire is obtained with charcoal, two to three full scoops of anthracite are added and spread over the burning charcoal with a poker.

After the anthracite is well lit, a scoop of bituminous coal is finally added for smoke effect (and smell!), and within a few seconds, as steam pressure builds up to maximum and the safety valve pops, the locomotive is off and running with all the realism of its full size counterpart.



John Coughran of Manhattan Beach, CA fires his Roundhouse/Shawe coal fired 0-4-0 JACK. His cap indicates that John is both a gentleman and a serious "driver". Not seen is his pewter teapot for pouring distilled water into the boiler. John presents a class act in the fine art of boiling water with a coal fire.

I have found another way to enhance aroma. Add a few wood chips of hickory or mesquite to the fire. This will certainly confuse the neighbors. They will think that a barbeque is underway.

To deliver the coal to the firebox, some small-scale engineers prefer a small coal shovel, while others prefer a scoop, such as supplied with Aster locomotives. During refueling, a pick can be used to clear the ash and clinker build up on the fire grate. On removing ash and/or clinker, the pick

can access the grate from underneath and not disturb the fire if you make sure you do this when your fire is built up and strong.



Originally built for Maine's two-foot gauge Sandy River and Rangeley Lakes Railroad, the SR&RL #24 prototype was over 46 feet long. One of the larger Roundhouse locomotives, it offers the bulk and mass that easily accommodates a coal fired firebox, boiler and axle pump. Like the original N^o 24, approximately a dozen of these Gauge 1 locomotives are now coal fired.

Cleaning the locomotive

Following the operation, after dropping the fire and once the engine is cool, you will want to clean the grates, sweep the fire tubes and remove the ash from the smoke box. Then it is time to wipe the locomotive down and prepare for its next run or for storage. Because of the grime on the locomotive, WD 40 or other similar light oil lubricant is used to wash off the grime and polish and the cool locomotive.

Bill Courtright is noted for his spotless and efficient Roundhouse / Shawe Sandy River #24. His time spent cleaning is approximately 1 hour cleaning to every 1 or 2 hours of running. Always cleaning the same day as the run prevents corrosion to the flues, fire grates and smoke box.

Coal firing is a dynamic process

Anyone who is considering coal firing must realize that all factors leading to keeping your locomotive running are dynamic. They are constantly changing and you must keep up with the changes or, as anything alive will do, it will die on you. Because of this, the locomotive does seem like it is alive even more than the gas fired models, where most of the time you are at least dealing with a constant fire.

"I love the challenge of running my coal fired Sandy River #24.", Bill Courtright exclaims. "Everything else pales by comparison! So far my longest run is 2 hours 48 minutes. Running these little coal-fired engines is doable and immensely rewarding."

As John Shawe reminds in his coaching session with coal firing novices, "practice makes perfect." As I have discovered, coal firing is 25% knowledge and 75% technique. Remember that with a coal-fired locomotive, you have the opportunity to be both engineer and fireman. The glow from the firebox, the aroma of coal smoke, and the hiss of steam combine in a miniature re-creation of the real thing.

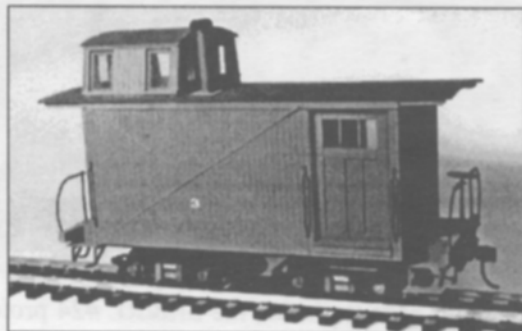
Contact information for aspiring coal burners

- To contact Jim Pitts by e-mail:
<jimpitts@southernsteamtrains.com>
- Barrett Engineering, 120 Field Lane, Pelsall, Walshall, WS4 1DQ United Kingdom
e-mail: <john@barrettengineering.fsnet.co.uk>
- Shaw Steam Services, Ltd. Howgate, Kimpton Road, Welwyn, Herts. AL69NN, UK
e-mail: <jndshawe@hotmail.com>
- Lamplight Farms, Menomonee Falls, WI 53051 USA
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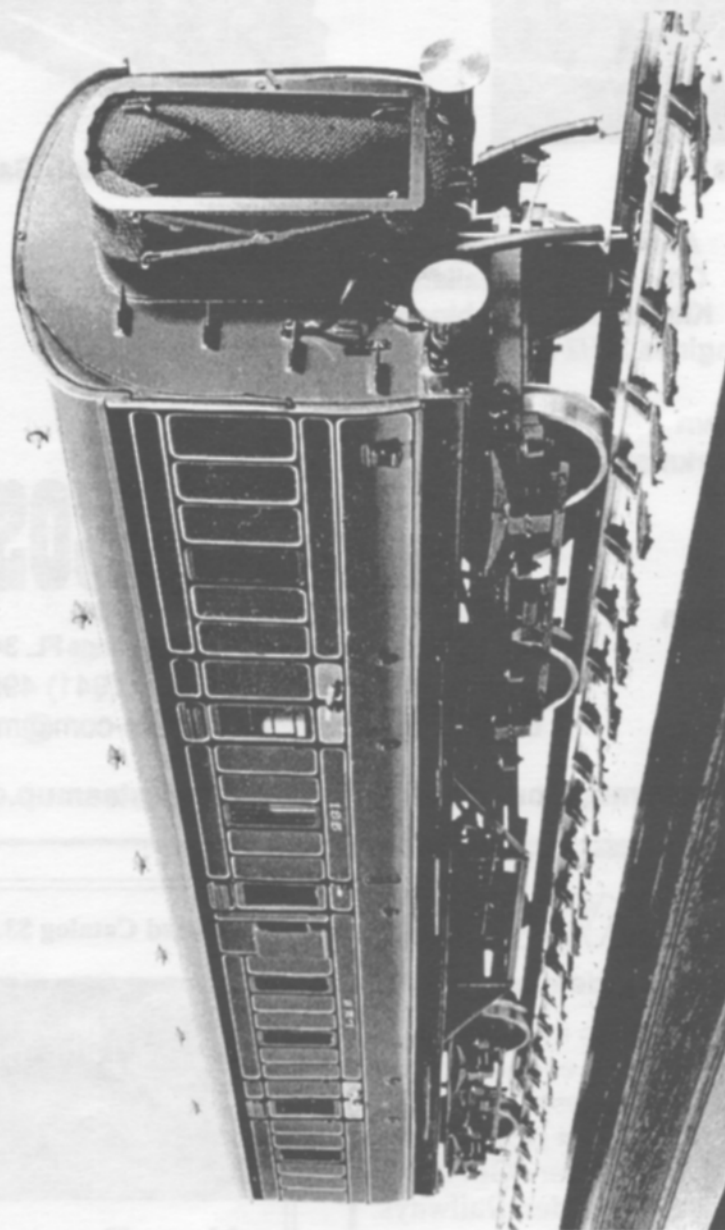
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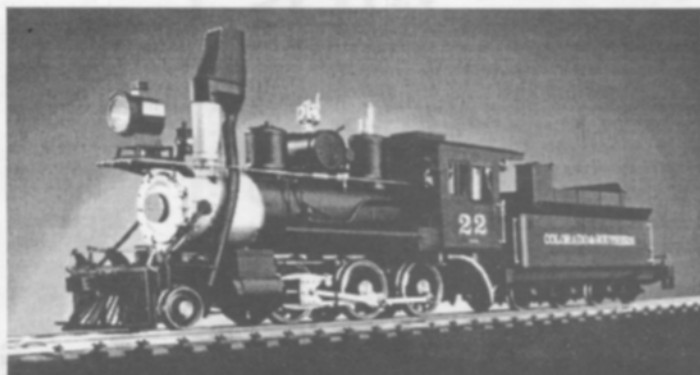
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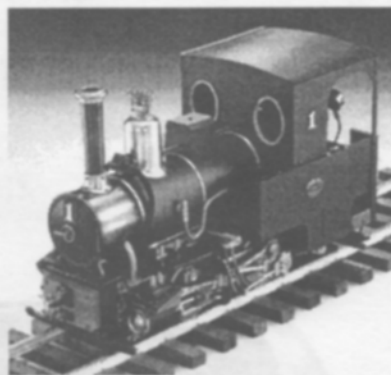
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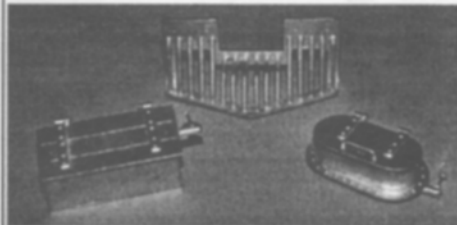
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Finescale Locomotive Company's Great Western Railway Class 48XX

article and photos by Geoff Spenceley

Specifications

Scale: 1:32

Gauge: 45mm (gauge 1)

Length: 11.25 inches

Weight: 8 lbs.

Cylinders: Two - 3/8" bore x 3/4" stroke, bronze with slide valves

Boiler: Silver soldered copper construction, bronze bushes, insulated lagging and brass outer boiler casing

Fittings: Pressure gauge, safety valve, regulator, blower and water test cock (near the top of the backhead)

Water feed system: Reservoir in side tanks with crosshead pump and hand pump in side tank

Fuel: Alcohol. Chicken feed system with two wicks. Tank is removable for convenient filling while under steam

Lubricator: Displacement type

Valve gear: Inside frame slip eccentric

Wheels are lost wax cast iron. Chassis, side rods and crankpins are mild steel. Body work is brass.

Accessories: Lamps, bucket with fireman's tools.

This manufacturer also offers Auto -Trailers for the locomotive plus a very comprehensive line of locomotives, coaches and other rolling stock.

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The Prototype

Introduced in 1932, this diminutive little locomotive is famous in the respect that Charles B. Collet (Chief Mechanical Engineer for the Great Western Railway) who designed the "Castle" and "King" was also responsible for these locomotives. It was based on a revived design by George Armstrong from the 1860's -- O K, I don't know him either, but my grandfather probably did!

The 48XX series were fitted for auto-train working and I have several photos from various Brit train magazines of the prototype working in locations where I grew up (thus my interest). They were popularly known as "Pull or Push" and that is exactly what they did. One end of the auto-trailer was fitted with controls where the driver (engineer) could drive the locomotive. This means that there was no need to turn the train around between destinations, and some-

back over the baffle where it is drawn through the center flue. One other advantage of this system, I believe, is that if the "driver" fails to keep water in the boiler, resulting in loss of steam and drawing of the fire, the flame will hit the baffle instead of the bottom of an empty boiler. Security for an old duffer like me who is apt to forget the loco while he pours another Tanqueray!

Fittings

The pressure gauge is small and does not "overwhelm" the cab. The regulator and blower handles extend to the opening on the right side of the cab and since this extends the levers, it gives the "driver" more control of these functions. The water test cock, as it is called, is mounted on the upper backhead with a small drain tube extended to drain under the rear of the cab floor. The handle ex-



The Finescale Locomotive Company's Great Western Railway 48XX. A very well engineered, nicely crafted and detailed loco that performs as good as it looks.

times the loco would even be sandwiched between two auto-trailers.

It was a very versatile little loco and was often used for freight or other duties. In fact, the basic locomotive came as a 14XX to a 58XX, depending on their assigned duties on the rails. Most of the articles (including photos) in my possession describe them as either a 14XX or 48XX--and both appear to be doing the same work.

Now to the model

The boiler is an excellent design with a center flue and four cross tubes which work very efficiently. There are two alcohol wicks with a hefty baffle over them and the fire is drawn forward, then

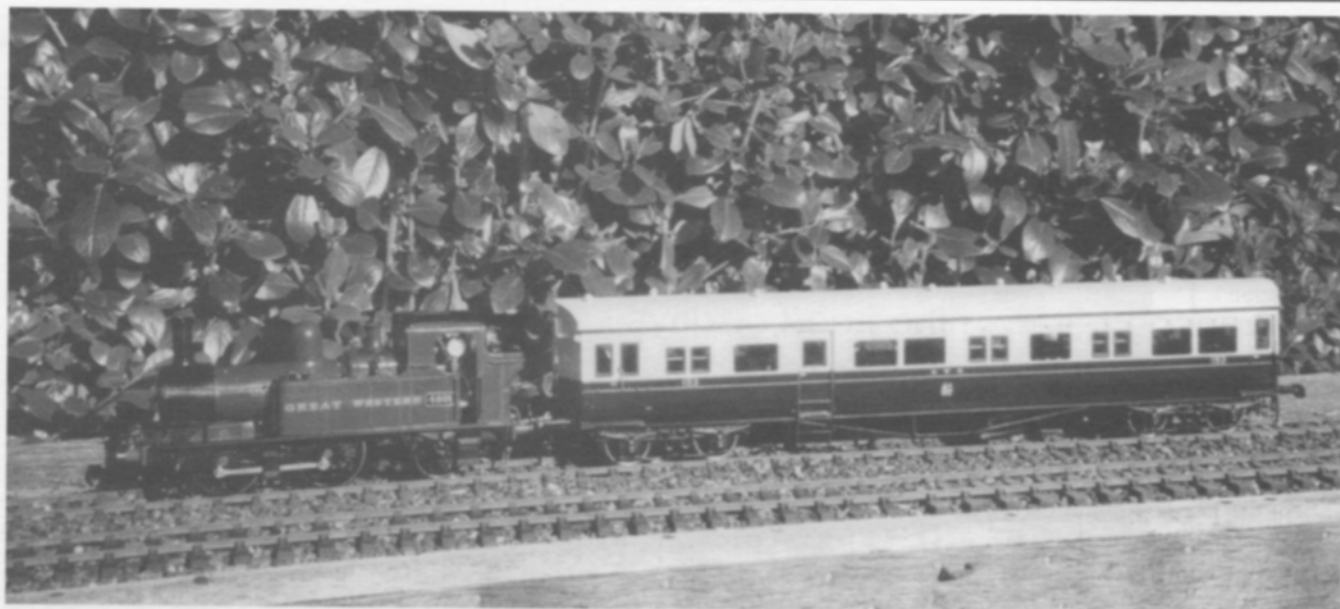
tends to the opening on the left side--and very useful it is--every loco should have one--as I'll explain before the end of this epistle--if I remember!

Cylinders

Slide valves--no worry about the wear of piston valves. Lubrication is provided by a displacement lubricator, readily accessible but nicely hidden under the footplate in front of the smokebox.

Reversing is slip eccentric, which happens to suit this reviewer, but not for all, I suppose, and not if you prefer radio control.

Water feed system



The Author's 48XX, complete with Auto-Trailer, in operation on his elevated railway in California.

The water feed system is by crosshead feed pump, which I have found to work very well with this loco. The side tanks both carry water and there is a cross tube for equalization. The bypass valve is located on the right tank while the hand pump is on the left tank.

The steel wheels are excellent for traction. The drivers are not sprung and I question the necessity in a loco of this wheel configuration, size and weight. The 2 of the 0-4-2T are sprung and provide for firebox and cab support in addition to transferring weight to the drivers.

One of the unique characteristics of this model is its excellent fidelity to the prototype, judging by the photos and outline drawings which a friend and GWR fan sent me from Bucks, UK--(GWR country). I took nearly all the measurements from the prototype drawing and divided by 32, desperately looking for a discrepancy--I couldn't find one!

The side tank vents on the model are very prototypical in size and appearance and are ingenious in that they also function as the hand pump on the left and the bypass valve on the right.

Well, I have "driven" it quite a bit, as many of you have observed (hopefully!). Twice at Jerry Reshew's steamup in Diamondhead, Mississippi and twice at Richard Finlayson's Spring Steamup in California.

I have fun with my trains and don't do extensive testing-- I only seek selfish (you bet) enjoyment . On steaming up the loco, well, I ain't going to give detailed instructions on firing a small scale steam loco--just relate some of my experiences on this one. Anyway, the operating instructions (which came late!) are quite comprehensive. However, out of necessity for this review, I did make some notes on a run the other day.

Time: 7.00PM . Temp: 55 degrees F. Partly sunny and calm. I don't read instructions because it is more exciting that way!! However, along with all the other necessary fireman's duties, I filled the side tanks and used the hand pump to fill the boiler. To do this, I opened the water test cock and pumped until water was expelled from the test cock tube-- about 60 pumps--quite quick, at about

two pumps a second. My fan batteries were a little weak -- probably good for a small loco -- but it still took the pressure to 25psi in a few minutes.

Then, with the blower valve open a tad, the safety valve soon opened up at about 60 psi -- a total of less than four minutes. Especially considering that I opened the test cock at times to expel excess water. Result; no priming at all. After steam was up, off it went with the auto-trailer, sounding much like my S.R. Schools and running very smoothly. After approximately 300 feet I closed the bypass valve all the way and continued to run until the boiler showed evidence of "overfill", at which time I opened the bypass valve, (my usual style!). I have not yet attempted to adjust the bypass valve until it feeds the boiler the exact amount. Speed was maintained well and was easily adjustable.

The total run was 20 minutes, at which time it was almost out of alcohol. The water tanks contained a little water and the boiler contained about two ounces. This is a good time to "tank up" with water and alcohol (for the loco!) while still under steam. Of course results will differ according to ambient temperature, humidity and air currents. Oh yes, and driver skill!! Incidentally, the lubricator was still half full, no worry there.

Pros and Cons

The Pros and cons are listed in the review. The green paint has held up well on my model but the black paint is easily scratched. These paints are not high gloss, in order to be prototypical I believe, so they may be less resistant to handling. Anyway, after almost two years, my model is still very presentable-- and very "steamable" !

In summation, the 48XX is a delightful locomotive to display and to run. There is nothing complicated about carrying it out to the track for steaming, with only the Auto-Trailer required to add realism.



A Model Steam Interurban

article & photos by Carl Berg

Public transportation in the good ol' days...

I spent the last few months working on a steam powered chassis for an interurban. It turned out to be an interesting challenge. There are a lot of layers of thinking that go into building

ing the throttle valve sticking through the clerestory roof doesn't bother me a bit. It got there after I had exhausted a number of other possibilities.



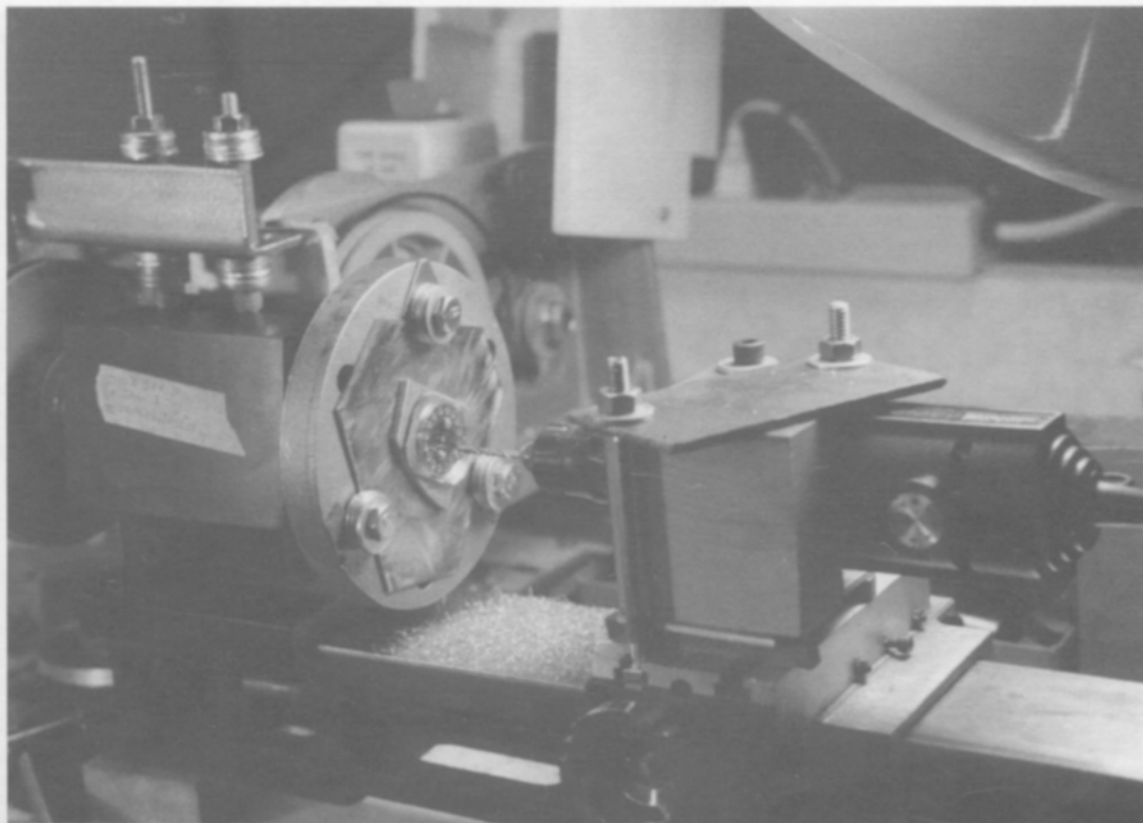
The Author's Interurban, Cyclops eye blazing in the dimming twilight, rumbles across a trestle at the Pennsylvania Live Steamers Memorial Day Steamup.

a model. There are some compromises too, and the subject of this article certainly illustrates this view.

The model doesn't depict any prototype I've seen pictures of. Pretty much all the model features have prototypes either in full scale or historical models, though. The reason for turning to features from old models is because they represent historical conventions that are part of what we do. As a consequence, hav-

I probably don't have to explain why I wanted to build a steam interurban to the readers of this magazine, so I'll get into the what and how of it.

The engine is a double acting oscillating 90 degree V twin with a built in reversing block. It was adapted by the Author from a marine design by Bob Coles called the BC-13. Mr. Coles is a very fine gentleman who is a lot smarter in these matters



The Author's interesting sprocket making setup, using a Dremel Moto-Tool™ and his Machinex 5 lathe. He mounted a block of maple in the cross-slide and bored it out to the diameter of the moto-tool using a homemade boring tool, then cut a slot in it and drilled and tapped a hole for a clamping screw. He then had a setup that would hold the moto-tool at center height on the cross-slide, allowing him to drill the holes correctly in the sprocket blank set up on the lathe faceplate. To index the sprocket blank, the Author used a gear mounted on the back of the lathe spindle. The indexing fixture can be seen in this photo, mounted on top of the spindle housing.

thought I'd try a chain drive using a miniature chain with a .1475 inch pitch. That's less than 5/32 of an inch between roller centers. I had the roller chain on hand and needed sprockets, so I made them. To do this I ended up mounting the Dremel tool on the lathe cross slide as a drill and used a gear mounted on the spindle to index the holes. In case you're wondering, sprocket teeth profiles can be a chore to generate. A tooth height of 60% of the roller diameter is a good place to start. You can file your way to success from there.

I ended up with the chain

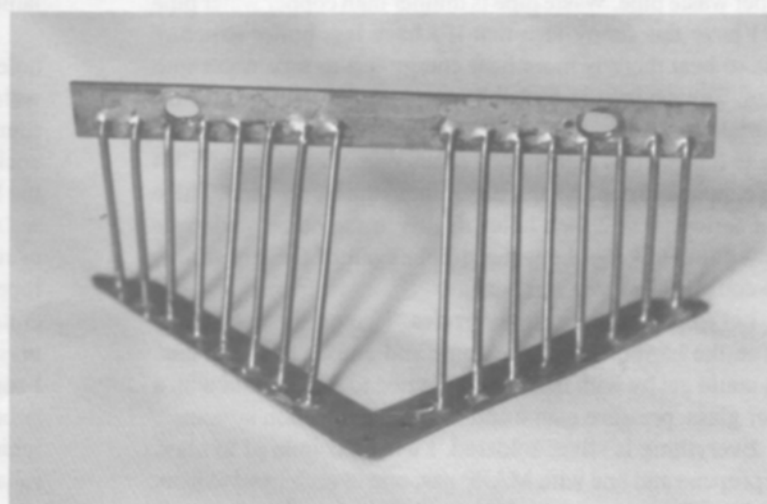
than I.

The advantage this engine has for Marine R/C use is that it can be controlled for forward/neutral/reverse with one servo cycling through less than 60 degrees. I love this engine. Because of the low parts count, it's relatively easy to make and will work well at around 8 - 10 lbs steam pressure. I have built three of these engines with different bore diameters to see if it made any difference in performance or steam consumption. The one in the interurban is 5/8 inch bore.

The engine is mounted on a truck with a wheel base of 3.1/4 inches. This truck will negotiate a two foot radius by itself. I originally set the engine on the truck to work out a drive system. The first one I tried was a spring drive and pulley system using a jack shaft for a 2 to 1 reduction because that's what the literature said you should do. I set up a four foot circle of track and ran an air line through a swivel in the center of the circle and ran the truck around the track. It ran slow, so I set it up for direct drive. It went faster. Hmmm.

Spring drives don't have a good reputation so I

driving the front axle and a spring drive connecting the two ax-



"Too Tall", the scratchbuilt pilot.

les. The spring drive really isn't that bad. Use the largest pulley you can and make the spring a little tighter than you think it should be. Somewhere along in here I discovered the engine didn't need a fly-wheel to run well so I dispensed with that.

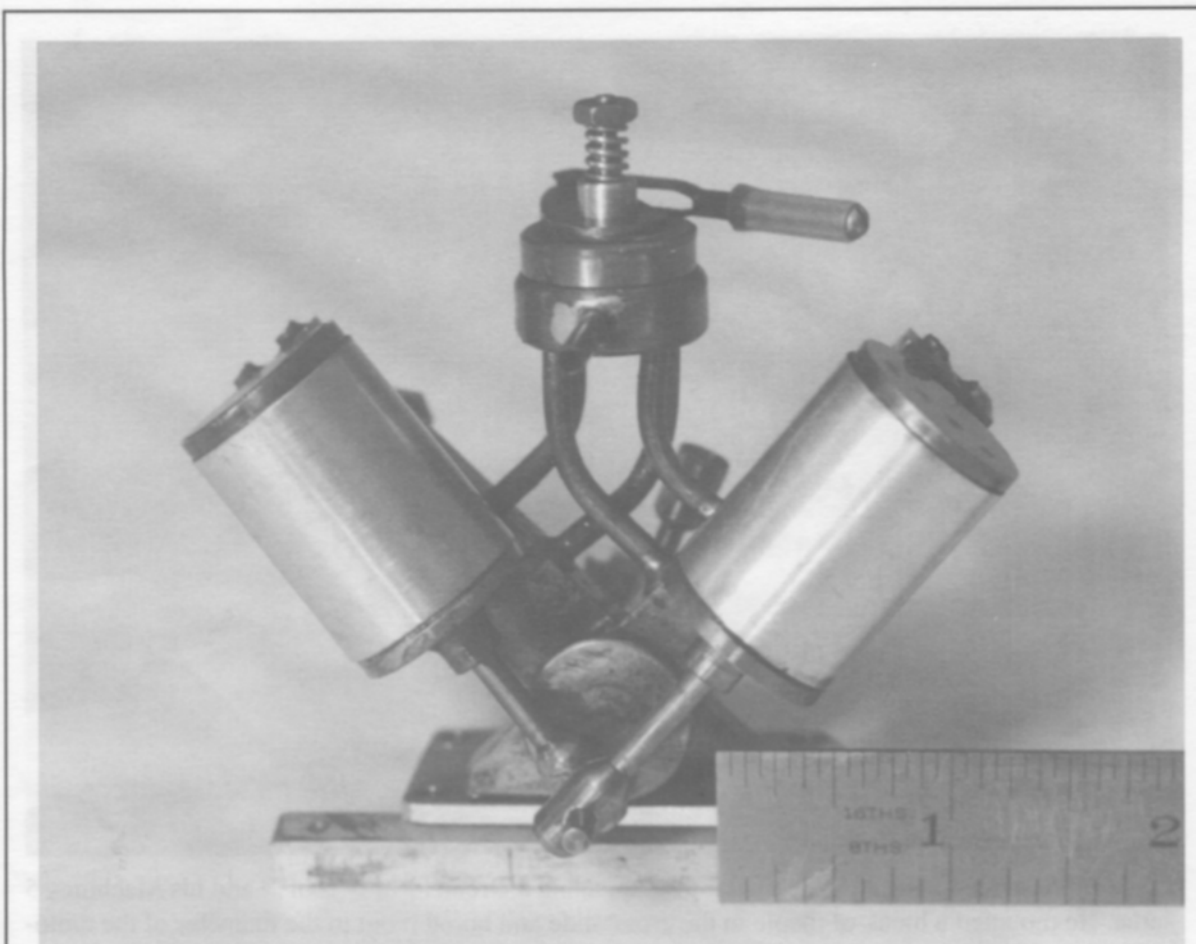
The chassis is a 1/8 inch aluminum plate stiffened with 1/4 inch square aluminum rod around the perimeter, held to the plate with 4-40 screws. There are two cutouts in the plate, one for the fire pan, the other for the front steam powered truck. The truck cutout was one of the sticky points in the development of the project. I

needed room enough for the truck to negotiate a 2.1/2 foot radius turn. There is just barely enough room. I actually made up a chassis test plate out of 1/8 inch plywood just to see if the thing would negotiate such a tight turn.

The second cutout in the chassis is for the fire pan and boiler shell. The boiler is made out of a 6 inch section of 2 inch copper waste pipe. Waste pipe is thinner than copper water pipe and I have this funny idea that if I have less boiler structure mass to heat there is more heat energy left to turn water into steam. The savings is probably nominal but you have to try any trick you can think of. There are three 1/4 inch water tubes. I made flanged end plates and a steam dome made out of a 3/4 inch copper end cap. It has a butt joint to the barrel shell. There are a series of 3/32 inch holes drilled in the barrel under the steam dome to keep the water droplets out of the steam line. You could make these smaller.

Let's see...there are five ferrules. Two on the back head, one on the barrel, one on the dome and one on the front end. You could get by with three, but I wanted to fool around with a water glass, pressure gauge and maybe an injection system.

Everything is silver soldered. I used a couple of torches, one propane and one with MAPP gas, one in each hand to heat, then I put the propane one down and picked up the silver solder. This is dangerous and probably not a good idea. Watch



V-twin, oscillating cylinders. The Author's favorite steam motor. That's the reversing valve on top. Scale included only for size reference.

your overhead.

Here's a trick I haven't seen mentioned: silver solder wire is very springy. It comes in a coil and doesn't straighten easily. If you pass it through a 1/8 inch diameter, foot long piece of K&S tubing you can use it almost like a pointer. The trick works with 1/16 and 1/32 wire. You can even use up small pieces by jamming them in the end of the tubing.

All the ferrules are tapped 1/16 pipe thread, except the filler hole which is 3/8 x 24. You need a bigger hole there because water doesn't scale. The front ferrule holds an air bleed valve as found in domestic hot water heating systems. It's used as a try cock or overflow valve to set the correct height for the water in the boiler. It is inexpensive and easily holds the pressure range we're dealing with. It comes with a 1/8 pipe thread. There's plenty of room to turn that off and rethread it 1/16 pipe. Being able to repeat the water height is important to the way the model is operated. On the backhead are the ferrules for the water glass and pressure gauge. The water glass is a half loop of silicone tubing. I used a half loop to exaggerate the vertical scale. It's another good idea that doesn't work in practice. Bubbles form in the tubing and the height of water in the boiler cannot be determined reliably.

The pressure gauge is a concession to style. I'm told that small gauges, especially inexpensive ones, aren't that accurate.

The one on the interurban reads about 7 lbs low when compared to the gauge I compare things with. It is neat looking, though.

The filler hole ferrule has a broad lip so it will seal more easily. The cap has a Viton O-ring set in the underside. The cap has a large diameter so it's easy to get on and off. I lightened it as much as I dared in keeping with the theory that less mass is your friend.

Steam for the engine is taken through the steam dome ferrule. This is an okay idea, but it makes things a little tall and led to the control location problem.

The boiler shell ends are aluminum castings. I wanted a round top boiler shell because I thought it would add interest as well as stiffen up the rather thin brass I had for the top and sides.

The fire pan is set under the chassis plate. It is an inch deep and is silver soldered. It has a very broad lip in which the air holes for the fire are drilled. This part took awhile to figure out. Originally I was going to have a removable pan ala old toy practice. This presented a problem lighting it, so I made the pan to be permanently attached, solved the air hole problem and then cut a door in the side of the boiler shell to fill the pan and light it. This was a pretty good idea. I had to use a heavier piece of brass sheet to stiffen the door cut out on the inside. It's silver soldered as is the screw for the door handle. A piece of silicon tubing on

the handle prevents burnt fingers.

When operating the model, even on an elevated track you're always above it, so the door idea is beneficial to those of us who don't bend over very well.

The pan is filled with fiberglass insulation material which is charged with alcohol and lit. Simple and adequate.

The rear truck is basic Bachmann. The end sills are wood as per suggestion in an article in *Steam in the Garden*. Many blessings on the author. It really does prevent burnt fingers.

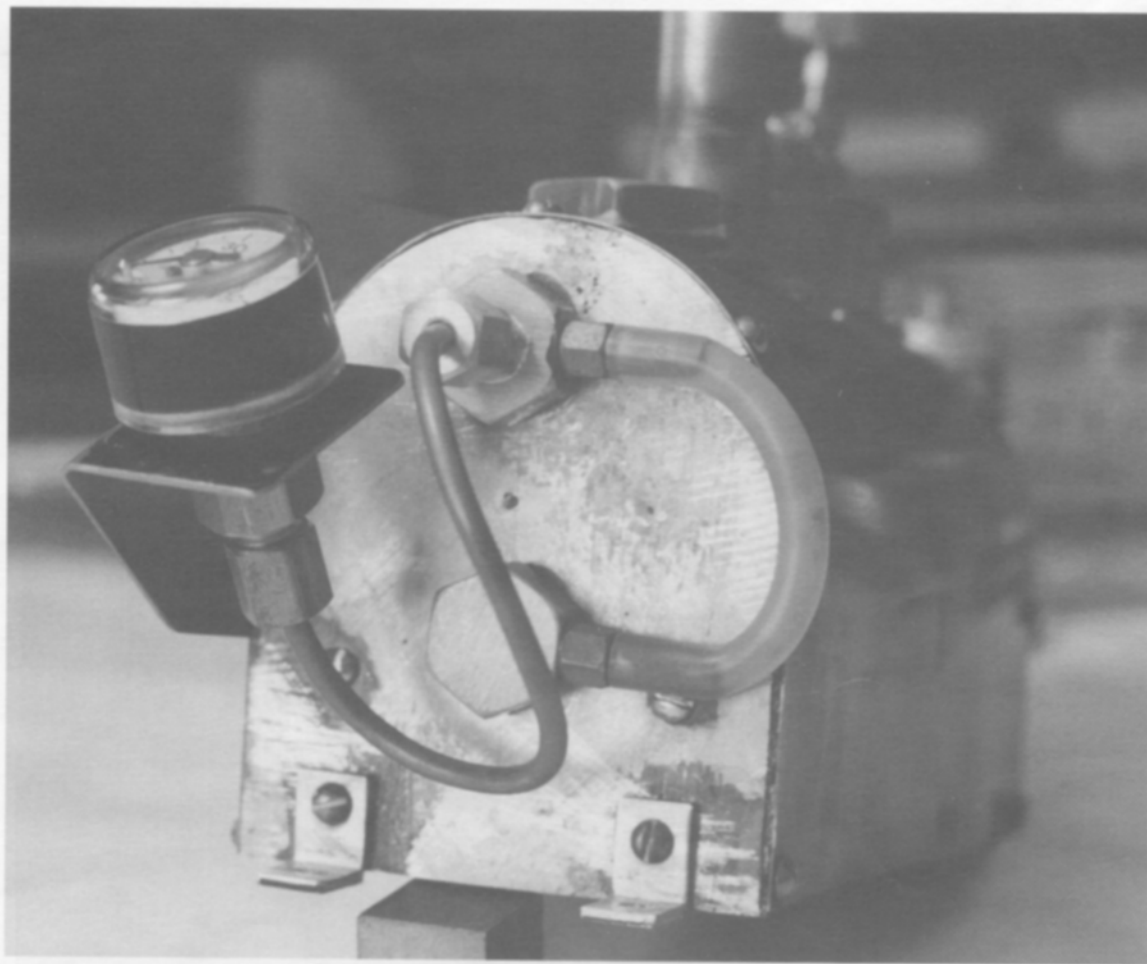
The pilot is brass rod and flats soft soldered together. Interurbans had wood pilots and these spindly looking rod ones. A word of advice...make the pilot shorter than you think it should be, as some tracks are a little rougher than others. You don't want it to contact the rail at the far end of a low spot and lift the truck in the air. It's a bear to modify a pilot after you've made it too tall. You may wonder how I know this.

So now it was time to test the contraption again on air. I set up the track, got out my swivel and proceeded to run it around. It was too fast. Control with the reversing block was inadequate. ARRRGH! A couple of pounds of lead on the rear deck and attaching another car wouldn't slow it down. There wasn't enough clearance for a larger sprocket on the axle so it looked like a throttle valve was needed.

I had made up some valves from a casting kit by PM Research. I arranged some plumbing using silicone tubing and tested again. Back in control. Speed changes were effected by increments of 1/8 turns of the valve.

On with the test program. I use the tried and true multi-phase test protocol for steam models - the garage test and the porch test. The garage test is to see if it works, the porch test is to see if it still works in a breeze.

I use boiler steam rather than exhaust steam for the blower in the smokestack. Exhaust steam has too much water in it and it gets in the fire bed, dilutes the alcohol and badly



Boiler backhead and fittings. The Author's interesting idea for a water level gauge didn't work as well as planned. See text for details.

affects performance. Rather than a valve I use a restrictor with a very small diameter hole in it. Previous experience indicated a #76 hole would provide enough steam for the blower. This time performance wasn't so good so I made a needle valve using a 2-56 stainless steel screw with a long taper on it just to see what I could see. With this placed in the blower line it was amazing to see what effect the blast had on the boiler pressure. It was like a rheostat. Turn up the blower, up goes the pressure. Naturally, I ran the boiler dry. Didn't hurt anything though.

As interesting as it was, the blower valve wasn't the way to control engine performance. I settled on a restrictor hole with a #71 drill diameter. Steam economy could probably be increased going down to #73 or #74, but I don't have those drill sizes.

Everything was now under control. Since I could repeat the water level in the boiler, all I had to do was determine the amount of alcohol fuel to use so the fire would go out before the boiler ran dry. All this effort produced consistent runs of 20 minutes on my track in the garage.

The second phase of the critical test procedure was interrupted by a sudden and overwhelming desire to go to the annual spring train races at Ridge Road Station, the train store west of Rochester, New York. They have a set of straight and parallel tracks maybe 150 -200 feet long where they race rocket powered trains! Only in America.

They have other classes they run before the ballistic stuff comes out so, there I was, firing up the steam chassis and waiting my turn. I noticed there was a cool northerly breeze coming off the lake and it occurred to me, more like an epiphany actually, that the porch test was going to be conducted under trying conditions in front of a rather large crowd.

Fortunately things went well. It made a decent pass. Since it's the only steamer to ever run on that track I claim the record for top speed and elapsed time for the class. If you wish to dispute that let me know and I'll see you there next May.

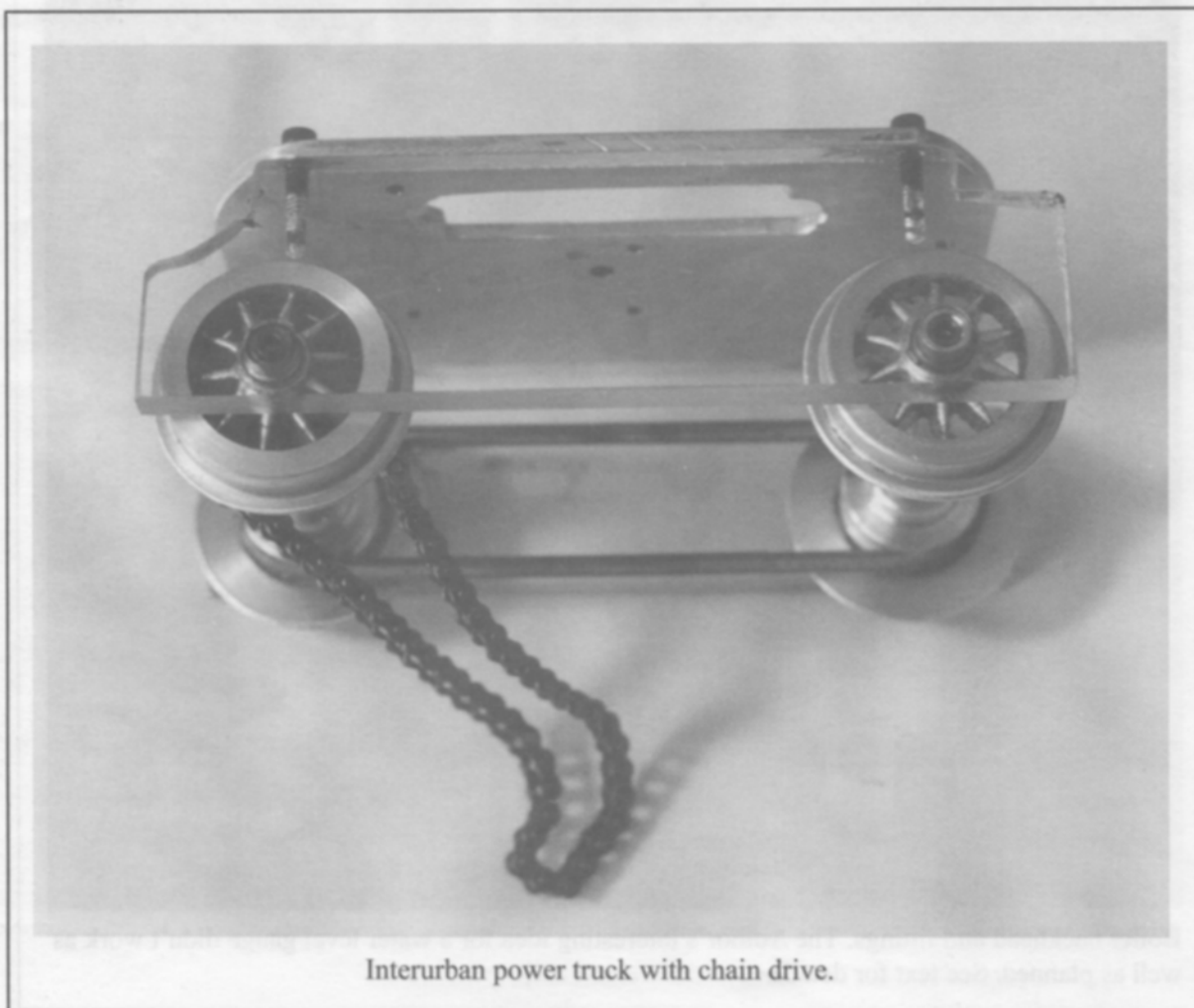
Are we having fun yet or what? Now I had to fit the body shell to the chassis. I wasn't sure it wouldn't melt. As a precaution, I put lengths of aluminum angle around the boiler to help dissipate the heat generated by the burner. I also placed the flue temperature gauge from the wood stove on the rear deck to see what kind of temperature I was dealing with. After a run it registered a temperature of 170 degrees F. I added another fin to hopefully dissipate more heat.

A test piece of plastic set on the side near the fire door didn't soften, so I figured things might get a little warm but the body would probably survive. For the body itself I made an inner baffle of thin aluminum mounted on standoffs over the boiler area. A similar application worked on my steamboat model, so I was confident about this arrangement.

The body is from a Bachmann Combine kit. I used the partition between the passenger and baggage sections for the front of the driver compartment. The headlight is an Ozark Miniatures accessory. The light bulb is one of those high performance penlight replacement bulbs. It's a little overkill until you see the effect at dusk. It could use more lights.

So there you have it. I took it to the PLS Memorial Day Weekend meet. Their Gauge 1 track is magnificent and a little intimidating. The interurban was constructed with a more modest branch line track in mind.

Well, nothing to do but fire it up and see what happened. I



Interurban power truck with chain drive.

had already rolled it through the switches and it handled them okay.

Starting drill consists of filling the boiler till water comes out of the overflow valve. Close valve, close filler. Oil the engine up. Take silicon steam line off valve and charge line with oil. Reattach. Set auxiliary blower on the smoke stack. Fill burner pan with the correct amount of alcohol. Close alcohol can and put away. Start blower. Light burner pan. Close fire door.

At around four minutes the oil in the silicon steam line disappears into the engine and the stack starts to spit. Take off the auxiliary blower. The stack spits some more.

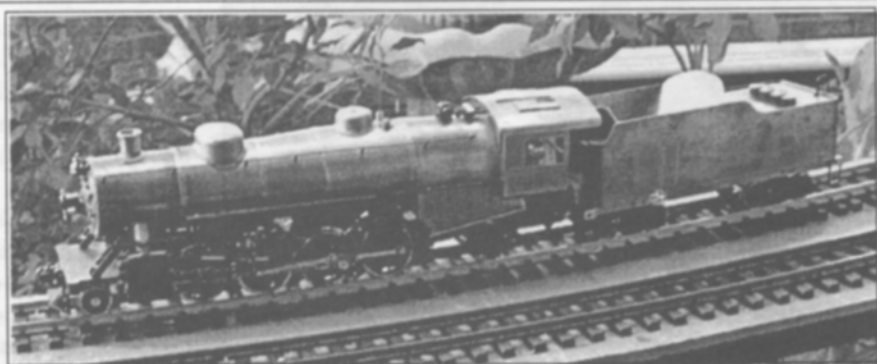
You have to manually turn over the engine to clear the condensate out of the cylinders. Then the engine starts to wiggle by itself. The body goes on, the model is placed on the track, and it sets off for a run. Through the yard, past the station buildings, around the slight curve and into the tunnel. It exits the tunnel and goes through the sweeping west curve taking on a life of it's own in the landscaped setting. One imagines a long ago time where a full scale interurban made it's way along the steel ribbon of commerce, intent on generating it's small contribution of revenue, in the lull between the passage of the great main-line locomotives.

It was that kind of day. American, English and Continental engines took their turns. Some of the performances were breathtaking. Periodically the interurban would go out.

One of the window frames started to sag from the heat of the day added to the heat of the burner. Following a suggestion, I cut open a couple of aluminum pop cans and made additional heat baffles for the sides. The car stayed firm after that.

It ran at what I judged to be a scale 40 - 50 mph. The final run was at dusk with the light on, carrying the last commuter home before returning to the barn to await another day.

This was a fun project. If there are any questions, contact me through the Editor.



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How to do it...

65 Minutes With Millie...

or How to Break In Your New Engine

by Jim Crabb

With ROUNDHOUSE bringing out another new engine in the basic series (September in the US), I thought it might be helpful to some of the newer steamers reading this publication to learn how I break in my engines. I had the first MILLIE and the second SAMMIE in the U.S.A. I also had an original RUBY (name on the list at Diamondhead 1998) and a JANE, as well as several other 0-4-0 locomotives.

Everybody has their own set of parameters which determine success for them in this hobby. My personal goal with each new engine is to see how slow - and how long - I can run on one fuel fill.

Almost everybody knows that the Classic series of engines from ROUNDHOUSE run right out of the box, meeting the minimum specs as stated in the instructions, because they have been run in for 8-10 hours at the factory before they are ever shipped. And almost everybody also knows that the Basic series is less expensive because the running in is left to the new owner.

The run-time duration I've achieved with my engines is at least 65 minutes with MILLIE, and at least 45 minutes with SAMMIE. These figures are for stock locomotives running light on level track. I have done nothing except water, lubricate, fuel, and fire. I use 70/30 butane mix year round. I use the steam oil provided by ROUNDHOUSE and distilled water. I lubricate with different kinds of gear oil but mostly I use 3-in-1™ in the blue can.

The first six to eight runs are made on blocks so there is no drag. I alternate forward and reverse so that the running gear is run in evenly. Very detailed records are kept during the first eight

to ten hours, recording: (1) the exact time (differentiating between "run" time and "burn" time); (2) the amount of water left in the boiler; (3) the direction of travel; and (4) the ambient temperature. I also must admit to being of the school which believes

you can't use too much oil on the moving parts of a locomotive.

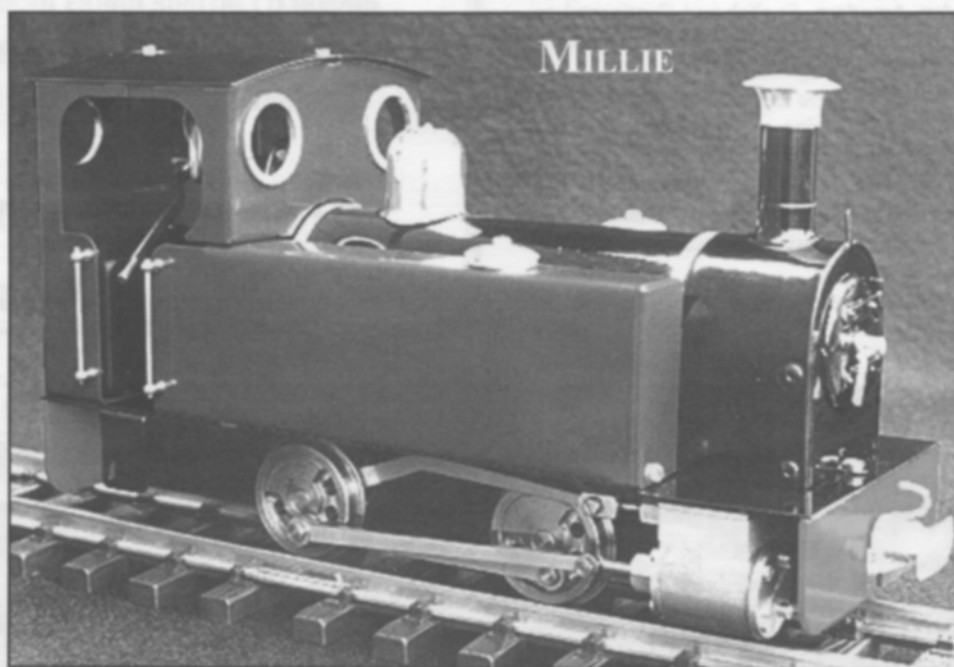
After every run I wipe the engine down and start over like it is the first run of the day: drain the lubricator, fresh steam oil, lube, water.....etc. If after 6 - 8 runs on blocks I'm satisfied with the performance, then the new engine is placed on the track and the run-in continues for a total of 8-10 hours.

A lot of people will feel that this is overkill. Some

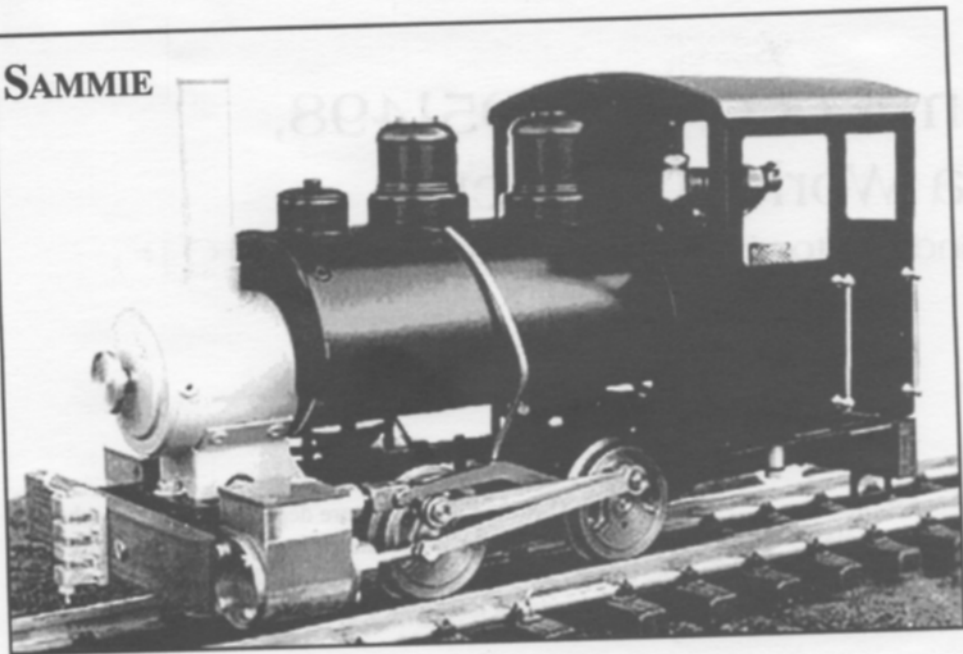
folks have told me about taking their new Basic series engine and putting it on the track right out of the box. The engine runs for 15-20 minutes and they are happy as larks. I would not presume to tell them (or anybody) how to run their engines. But...that just isn't good enough for me!

I've learned with my ROUNDHOUSE engines that you can get a lot more distance by properly breaking them in and managing the resources - fuel and water (read throttle). With MILLIE you can easily see the reflection of the flame by looking down between the flame shield and boiler. I found it was often easier to do this at night or in dark shade. Once I got used to carefully observing the flame, I was able to achieve the proper burn rate easily in all but the brightest direct light. With SAMMIE there is a tiny opening looking from the backhead through which you can actually see the flame.

Usually I turn the gas down after a couple of minutes, and once the safety lifts I turn it down still further until there is barely



SAMMIE



a flame visible. When you are running light this is plenty of gas to keep the boiler lively. After about five minutes with either engine I open the throttle about 1/3 of a rotation and LEAVE THE ENGINE ALONE! After another 45-75 seconds it will start all by itself. With the run-in procedure described it is not necessary to clear the cylinders of condensate using any of the methods I see employed with many other locomotives.

After one complete circuit I adjust the throttle to meet my criteria or requirements, and then (if I may borrow a quote from Paul Kenney) "get out the calendar to time the run!"



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My Steam Loco, JNR D51498, is a World Traveler

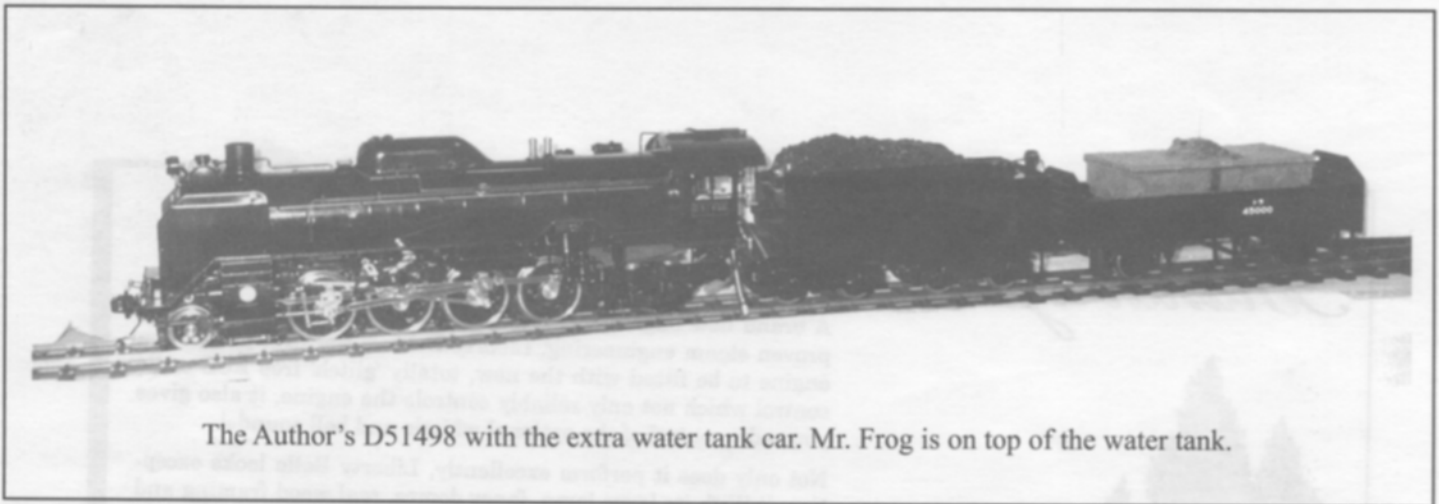
article and photos by Kattchan Tanabe

My first impressions - 1995

D51 is the most popular and the most numerous steam loco in Japan. Since I completed the D51498, it has run at many places in U.S. and Japan.

I would like to describe the impressions of my experiences.

hol, 200cc. This time is much more depend on the atmospheric temperature, the water temperature, the weight of cargo, the incline of the railway, the speed and cut off rate. The time of my D51's solo running is so long I can take a siesta.



The Author's D51498 with the extra water tank car. Mr. Frog is on top of the water tank.

My D51498 has run more than 20 hours. It has been running smoothly in all of the speed levels from low speed to high speed. Since I fired it up for the first time, it has run over 20 hours. It has run at many places, such as YLSC (Yokohama Live Steam Club in Japan) Railway, International Small-Scale Steamup in Diamondhead, Mississippi, IBLIS (International Brotherhood Live Steam) in Griffith Park, Los Angeles, California, and Lee Barrett's Garden Railroad (Gauge 1 Model Railway Association, Southern California Group).

I coupled the extra water tank car behind my D51, and the car supplied water to my D51's tender. I didn't want to follow after my D51 to replenish the water.

I put the Green Frog on the water tank car as the Frog is the guardian angel of the water. The Frog has drunk up the water of many places and he seems to be in very good condition, as my D51 is too.

The fuel tank capacity of my D51 is 200cc, and that requires two fillings of the water tank, because of the lack of capacity with the water tank of the D51's tender.

My D51 runs about 20 - 35 minutes with one filling of alco-

The Difference of the running method or the Steamup meet between U.S.A. and JAPAN

In the old days Japanese SAMURAI improved his skill by trying his skill with a follower of another knight. And I also want to get much knowhow by trying to run my D51 in many places.

It has been my splendid experience that I have joined several steamup meets in the U.S.A.

The Difference of the running speed

It's the most surprise for me that in U.S. the locos were running very slowly. This method gave me a feeling of reality. I thought that the real steam locos were running like this.

I was deeply impressed that the Gauge One Locos were running quietly and cleanly without blowing steam from the safety valves and oil from the stacks.

On the other hand, in Japan, the locos are running in high speed often with blowing steam from the safety valves. The

owners of the locos are many times following after the locos, holding the water bottles.

The Difference of the direction to run

U.S.A. - the right turn circle (clockwise)

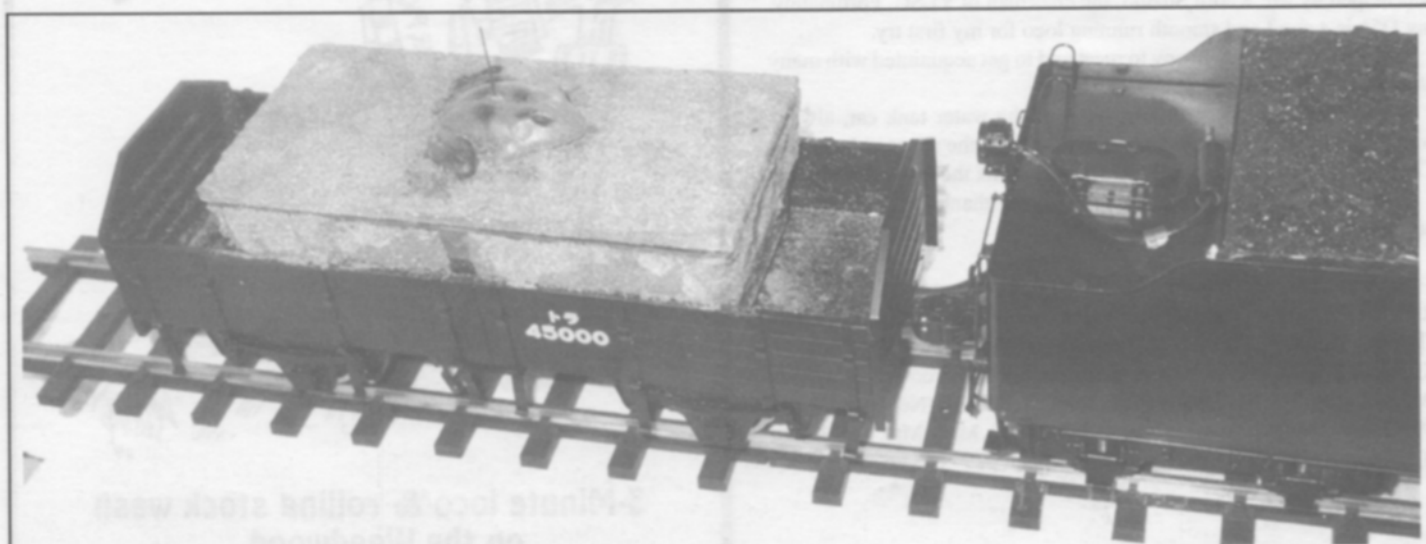
JAPAN - the left turn circle (anti-clockwise)

I guess those came from driving on the right hand side of

the heavy weight of Japanese cargos and coaches and to the high speed running in Japan, I think.

As to the high speed, I had a derailment while running in the U.S. In that case, at the corner, several coaches pulled by my D51 were jumping the track. This happened, I guess, because of the light weight cargos becoming airborne. Someone took the photo evidence of this accident!

The waist-high railroad



The rod sticking up through the frog is a water level gauge. The water tank is made from a butter box and carried in an open wagon. The black water pipe between the tank car and the tender runs alongside the knuckle coupler.

the road in the U.S.A., but the left hand side in Japan.

To be run by radio control and with sound effect

I was surprised that many locos in the U.S.A. were running by radio control. In Japan, there are very few, and none with sound effects...but soon it will be popular in Japan.

The Difference of the weight with a coach and a cargo

The coaches and cargos made in U.S. are very much lighter than those in Japan. So, a loco can draw the coaches and cargos made in U.S. almost two times more than those made in Japan.

The heavy coaches and cargos made in Japan, I think, can allow more speed, because the trucks do not derail even at high speed.

But the Japanese rolling stock are awfully high priced, such as an open cargo van with two axles, four wheels is about \$200 and a coach with four axles is \$600-800. Those prices are ten times higher than made in U.S., I would guess.

The knuckle coupler's pin on my D51, with 2.6mm diameter, broke down after 15 hours of running. This was owing to

I feel it is a great convenience that the railroad is at waist height in U.S. In Japan, the railroad is almost always constructed at ground level.

Food and hospitality

It's expected in Japan that everyone prepares their own food. At the YLSC meets, each member prepares their own lunch, or goes to the restaurant with each other, because there are many lunch shops and restaurants even if YLSC is located in a residential area.

On the other hand, in U.S. it's different from in Japan, I feel that there is a good and kind hospitality at the Diamondhead meet and at Lee Barrett's garden railway meets.

I saw in a railway video in U.S. that the workers were served food in a dining car behind a snowplow. That is unthinkable in Japan.

These cases, I think, depend on a different way of thinking on both countries, not of a specific area of the country, nor of the population density.

Generally speaking, I felt that in Japan they are devoted to the mechanism. They like to get their locos fast running and they

like to hold a stag party, and that in U.S. they make much of the realistic running, such as a slow and a smooth speed, a sound effect and so on, and they want to have a happy time.

My first steam loco, the D51498

I wanted to make a model steam loco when I was a young boy. D51498 is my first attempt at building a steam loco, and my long-cherished desire has been fulfilled.

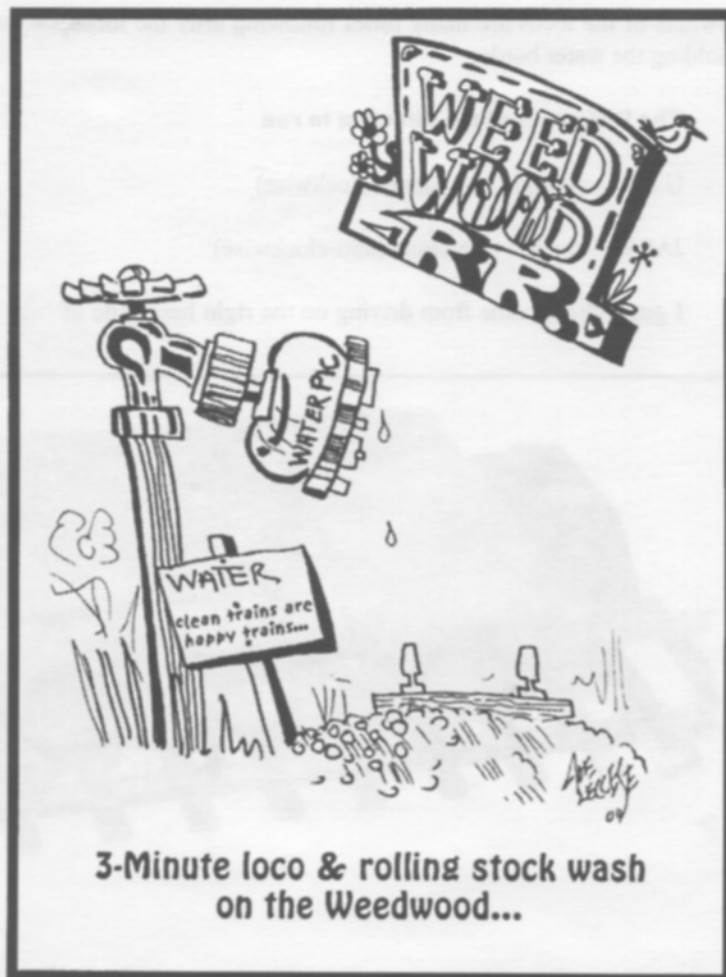
When I was making the loco, I was helped by Aster with things like polishing a slide valve and fixing the location of the blower-pipe. I was helped by Mr. Kaoru Suzuki, the chairman of YLSC. Fortunately, my D51 is a good and smooth running loco for my first try.

In 1995 I was very happy to meet and to get acquainted with many steamer enthusiasts in the U.S.A.

My Mr. Frog, the guardian angel of the water tank car, always whispers to me that he looks forward to drinking the water in Australia, Canada, and Europe, especially he wants to drink the water in Trinidad.

At the end, I would like to express many thanks to the following persons for being friendly and helpful to me.

Mr. & Mrs. Jerry Reshew (Mississippi), Ed Newman (Mississippi), Richard Finlayson (California), Toyoki Inoue (JAPAN), Dan Rowe (Texas), Geoff Spencely (California), Allan Starry (Washington), Kousaku Wada (JAPAN), Gordon & Donna Sherwood (California), William & Emiko Brower (Washington), Clark Lord (Nevada), Clover McKinley, John & Jeanette Wieland (California), Mr. & Mrs. Lee Barrett (California).



Happy Holidays and Thank You!

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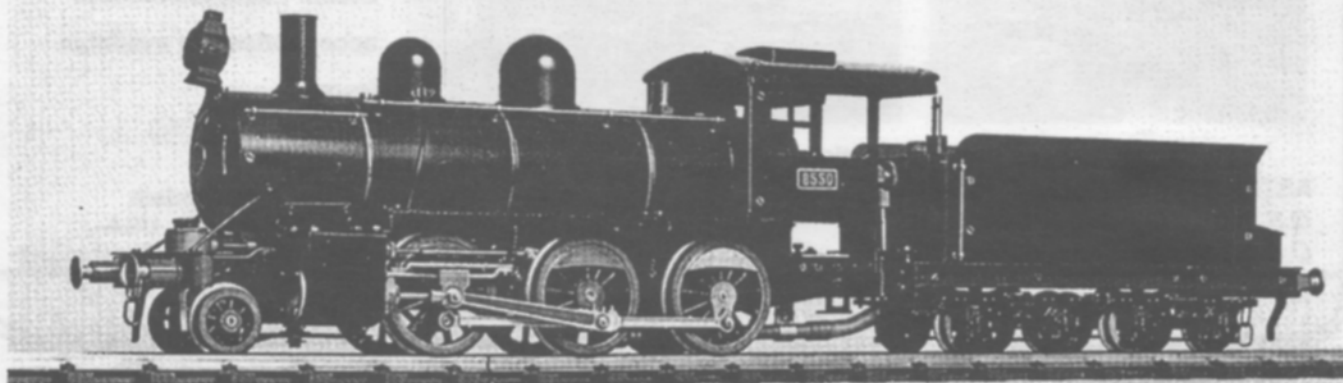
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What??!! Another Aster Mogul Modification?

by Jeff Runge

Making a classic even better...



Aster's Mogul as it came from the factory.
photo courtesy Aster Hobby Inc.

Since the inception of *Steam in the Garden* magazine we have been reading about modifications to the original Aster Mogul. (See fig 1) Many of the modifications disguised the loco to the point where it is hardly recognizable. (See fig 2) Well I have one more, which won't change the appearance but will enhance its operation.

A few years ago I purchased an Aster 8550 Mogul single cylinder kit with the second cylinder conversion. The single version used a 13mm cylinder (as used on the Schools). The Americanized version used two 10mm cylinders. I was warned that the 8550 was a temperamental runner at best, but I like a challenge, and this was my first try at building a kit. I did all the usual modifications (see the article by Murray Wilson in *SitG*, issue #44) and raised the boiler for better running.

After all this it was still just an okay runner. Then one run day at the Pennsylvania Live Steamers track, as I was watching the Mogul pull a half dozen cars, I could see the drivers slipping part way through each rotation, not an even spin. This was not easy to see at higher speed, but was still occurring.

This got me thinking about scale. We scale the size down, and end up with a very light weight engine. The larger engines have considerably more weight, and don't have this problem. The solution? Add weight! I added about 1-1/2 lbs. to the engine. Now, when pulling the same number of cars it will make 4 or 5 more laps per filling or pull a heavier train. In February at Steamtown National Park it pulled 14 cars on Harry & Paul Quirk's portable track. I added over one pound to the underside

of the cab roof and the remainder under the running boards. (See fig 3) You may find other places to hide the weights. I used the extra thick stick-on wheel weights used to balance automobile wheels. This is a simple installation and requires no special tools. After seeing the results with my engine, Harry Quirk did the same thing to his with the same good results.

I do not know if this weight will be useful on the engines with two 10mm cylinders.



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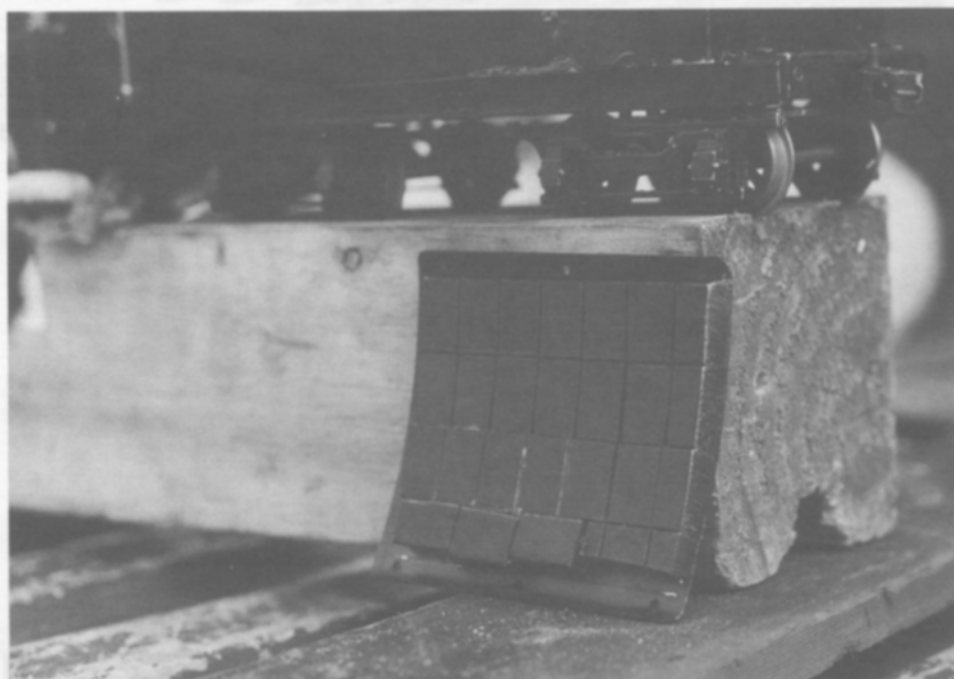


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Ol' 198, Harry Quirk's modified Aster Mogul, has seen many years of service on Harry's Aikenback Central RR.

photo by Harry Quirk



The underside of the cab roof on the Author's Aster Mogul.

photo by Jeff Runge

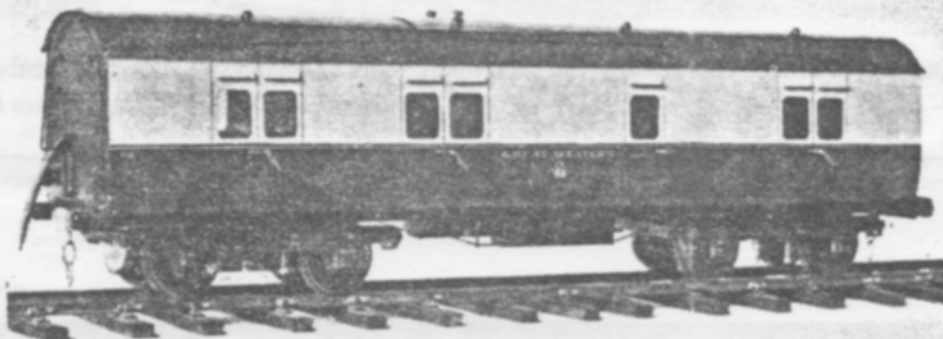
Technology From the Past - The Harrison Control System

by Larry Bangham

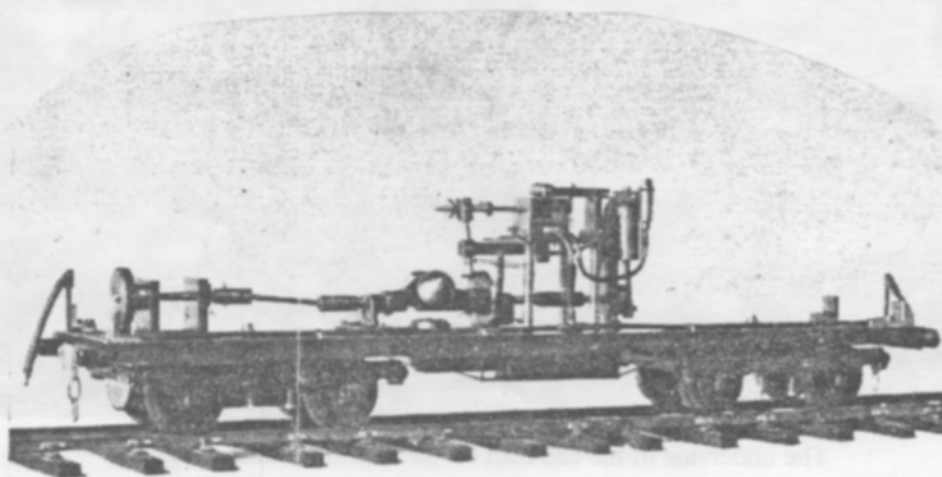
I thought the following information, which describes a speed control system developed about 1934, might be of interest to some of our readers.

Automatic train control was accomplished long before Radio Control was around. Murray Wilson told me of this system several years ago and mentioned that he had a description of it stashed away somewhere if I was interested in seeing it. I then read in the *GIMRA Newsletter* about one of these trains currently being run in England and my interest was

Fig. 1



Mr. Victor B. Harrison's control coach. It is always coupled next to the engine and resembles a G.W. steel panelled bogie luggage van

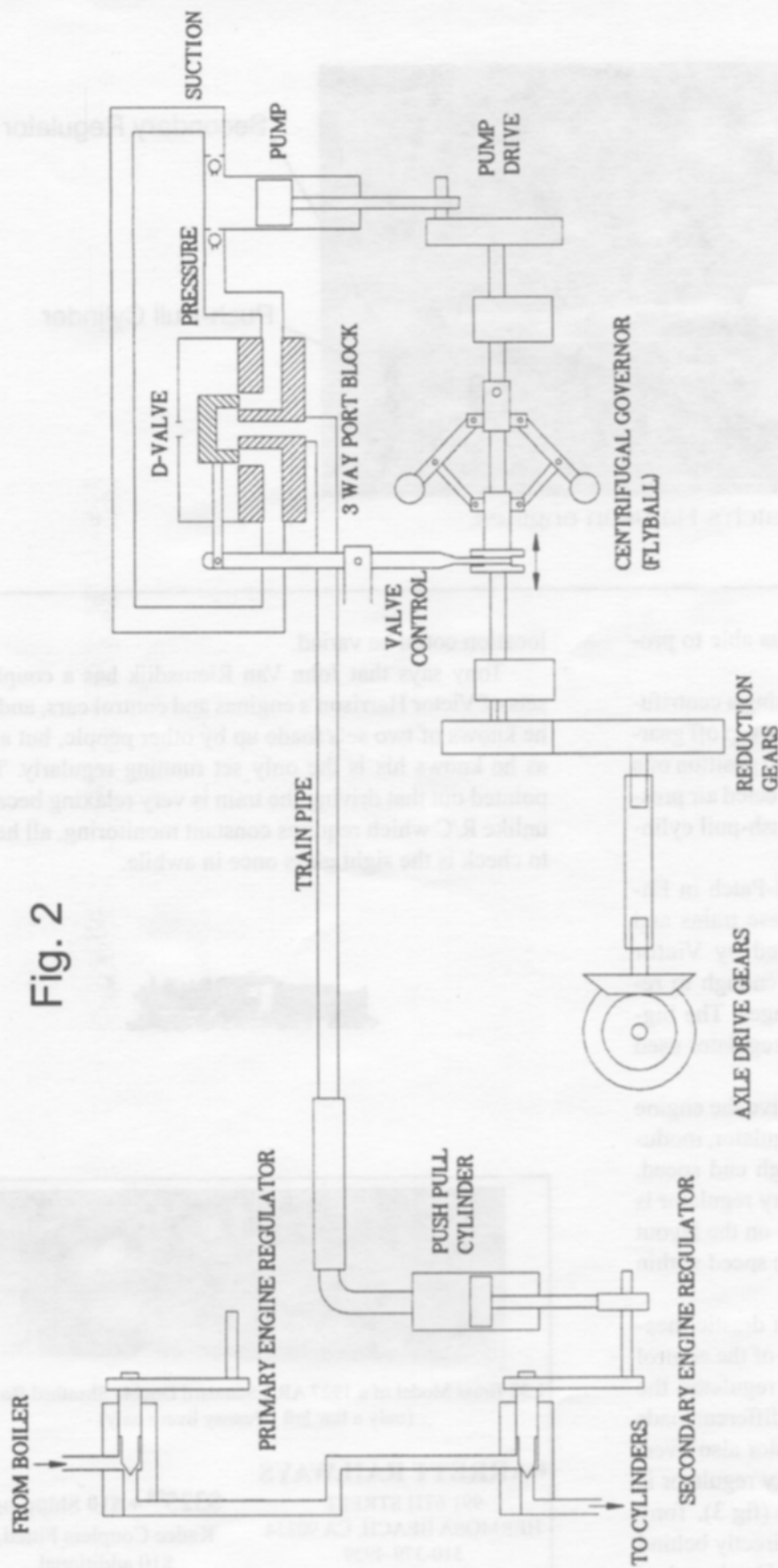


Mr. Harrison's control coach with bodywork removed.

piqued. I reminded Murray of his offer and he was kind enough to go through his attic in search of an old article which he then sent to me.

The article appeared in a book titled *Garden Railways*, written by Ray Tustin. Figure 1 (sorry about the poor quality of this illustration - it's a photocopy of an old magazine article - ed.) shows the outside and inside of the control car which is disguised as a luggage van and is pulled behind a modified locomotive. From the description in

Fig. 2



OPERATION

UNIT IS MOUNTED IN A SPECIAL CAR PULLED BEHIND A MODIFIED LOCOMOTIVE. THE PRIMARY REGULATOR IS MANUALLY SET FOR THE MAXIMUM GRADE AND LOAD. TRAIN STARTS OUT WITH GOVERNOR IN A BALLS IN POSITION CAUSING D-VALVE TO BE IN FULL PRESSURE POSITION. PRESSURE IN PUSH PULL CYLINDER CAUSES REGULATOR TO OPEN. AS ENGINE ACCELERATES, D-VALVE IS MOVED TOWARD CENTER POSITION (SHOWN). WHEN CRUISING SPEED IS REACHED, (CENTER POSITION), THE TRAIN PIPE IS OPENED TO ATMOSPHERE. NULLING THE MOVEMENT OF THE PUSH PULL CYLINDER. IF THE ENGINE SLOWS, THE RETRACTION OF THE GOVERNOR BALLS PUSHES THE D-VALVE BACK OVER THE PRESSURE PORT CAUSING THE CYLINDER TO OPEN THE REGULATOR. IF THE ENGINE ACCELERATES BEYOND THE CRUISE POINT THE GOVERNOR, IN BALLS OUT POSITION, PULLS THE D-VALVE OVER THE SUCTION PORT, CAUSING THE CYLINDER TO CLOSE THE REGULATOR. THE PRIMARY REGULATOR IS USED TO STOP THE ENGINE.

DESIGNED AND FABRICATED BY C. COURTICE
AND VICTOR HARRISON ABOUT 1934

SCHEMATIC- AUTOMATIC TRAIN SPEED CONTROLLER

DRAWN BY L. BANGHAM 3-23-00
FROM INFORMATION FURNISHED BY MURRAY WILSON
REVISED 6-10-00

Fig. 3



One of Tony Hall-Patch's Harrison engines.

the article and suggestions by Murray, I was able to produce a functional schematic (fig 2).

The system was cleverly put together using a centrifugal gramophone governor and an air pump driven off gearing from an axle. The governor controlled the position of a D-valve in a three-way port block which directed air pressure and/or suction from the pump to the push-pull cylinder connected to the regulator.

I then sent the schematic to Tony Hall-Patch in England, who is currently running one of these trains and two locomotives designed and fabricated by Victor Harrison and C. Courtice. Tony was kind enough to review the drawing and point out some changes. The biggest change was the addition of the second regulator used on the locomotive.

The primary regulator can be used to drive the engine in the normal manner with the secondary regulator, modulated by the control car, controlling the high end speed. Or, for remote automatic control, the primary regulator is set to get the train over the maximum grade on the layout while the secondary regulator modulates the speed within the limits set by the primary regulator.

Having two regulators may seem like a drastic measure, but it greatly simplifies the calibration of the control car, for without the control of the primary regulator, the valve settings would have to be adjusted for different loads and running conditions. The primary regulator also overrides the system for stopping. The secondary regulator is located in the smoke box of the locomotive (fig 3). Tony also indicated that he pulls the control car directly behind the locomotive, although originally Victor Harrison had installed train pipes on several cars so that the control car

location could be varied.

Tony says that John Van Riemsdijk has a couple of sets of Victor Harrison's engines and control cars, and that he knows of two sets made up by other people, but as far as he knows his is the only set running regularly. Tony pointed out that driving the train is very relaxing because, unlike R/C which requires constant monitoring, all he has to check is the sight glass once in awhile.



1:32 Brass Model of a 1927 ARA Standard Double Sheathed Boxcar
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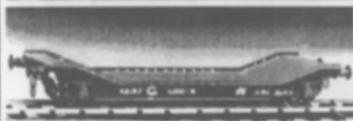
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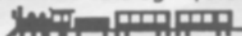
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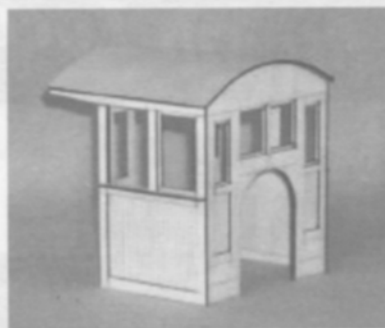


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John Hemmens RICHMOND Marine Steam Engine

text and photos by Ray Bell

Equipment List for this review...

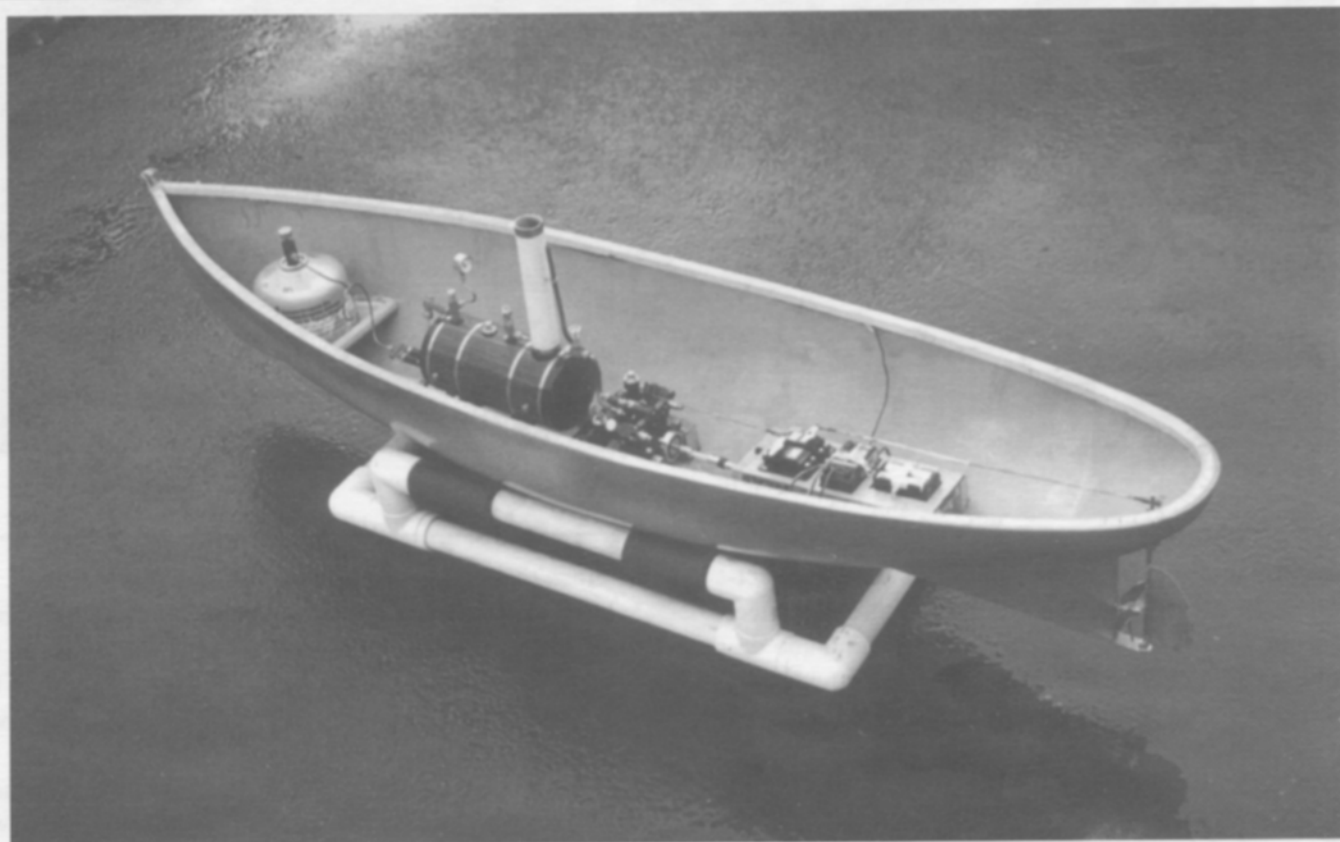
Steam Launch: (unnamed)

Overall length: 50 inches

Boiler: John Hemmens Bradford boiler

Steam engine: John Hemmens "Richmond"

Propeller: 2.5" diameter, 4-blade

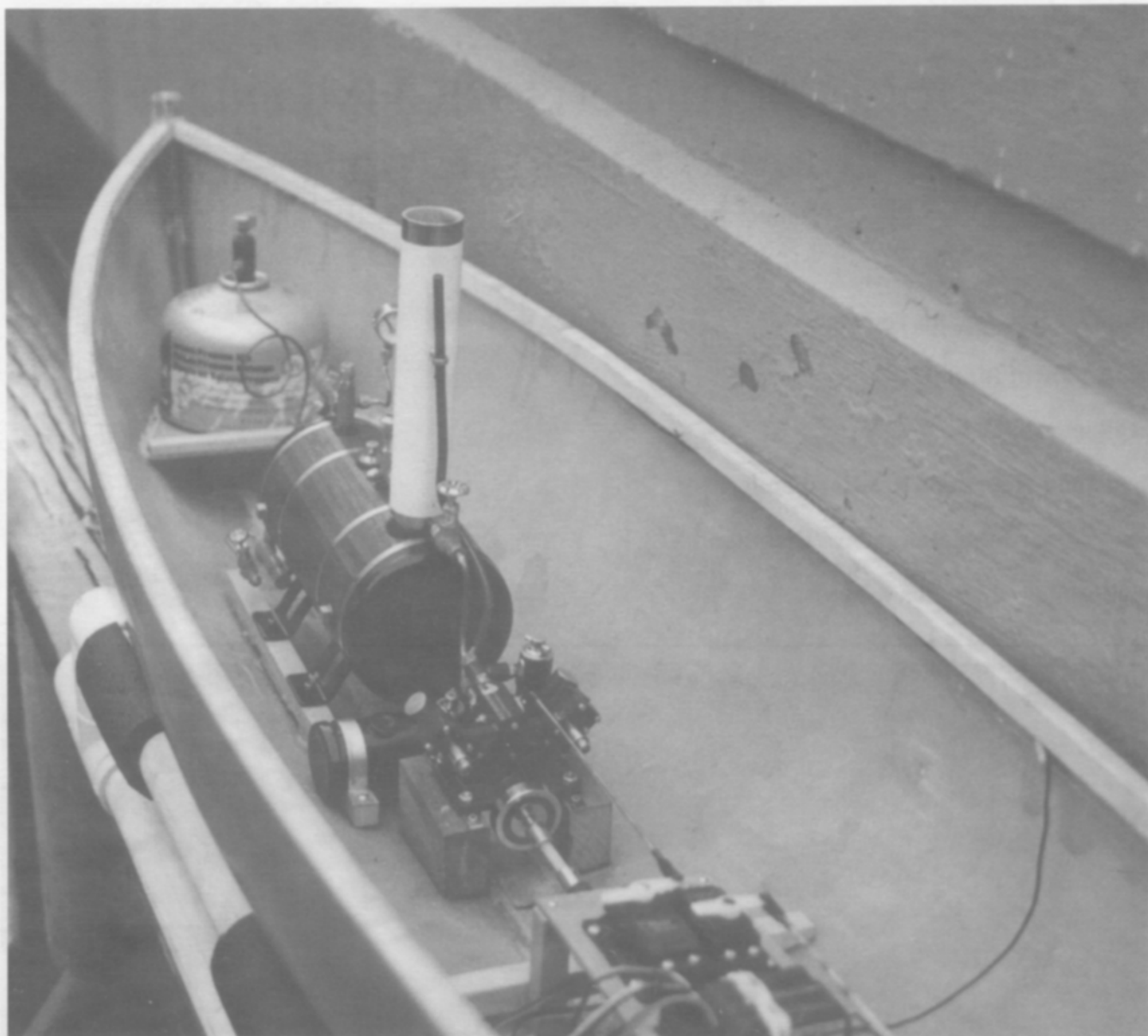


The author's as yet unnamed hull, with equipment installed and ready to test. Note the unique boat stand.

In *Steam in The Garden*, May-June 1999, issue N° 51, I submitted an article about a steam powered, 28 inch Harbor tug named Judith Ann. The Project was basically an experiment to evaluate a Maxwell Hemmens Mini-Max

'V', in a small boat. The performance of this two cylinder oscillating engine was so good that I decided to try one in a bigger boat to see how it would perform.

First, some details about the engine. The Mini-Max



A closer look at the equipment installation.

'V' has been improved with the addition of some connecting rod seals, a modified forward/reverse/throttle valve, and a name change to the "**Richmond**". The unique design of the sliding cylinder-to-base interface provides for an excellent moving seal. This little engine does not spew steam out of this very active interface like most of the other oscillator engines on the market. This is a very clean running engine.

The hull I picked for this next phase of the experiment was a 50 inch hull with a 12.5 inch beam. Lots of room for the steam plant and radio. In the initial configuration, the total boat only weighed 12 pounds. The 2.5 inch diameter propeller just barely went below the surface and would cavitate under about half throttle. However, the boat performed very well. I would estimate its top speed to be about

4 times scale for an open launch of this configuration.

To continue the experiment, I added 12 pounds of lead in the bottom of the hull. Now the boat set deeper in the water like it should and it still performed well. The top speed was still about 4 times scale. It was just a bit slower on acceleration and stopping.

The conclusion to all of this is that the John Hemmens **Richmond** engine is a powerful little work engine that will perform well in just about any reasonable size boat model you want to build. It is small, light, and a good, clean running engine.





Different views of the Author's test hull moving through the water. Clean wake, nice plume!



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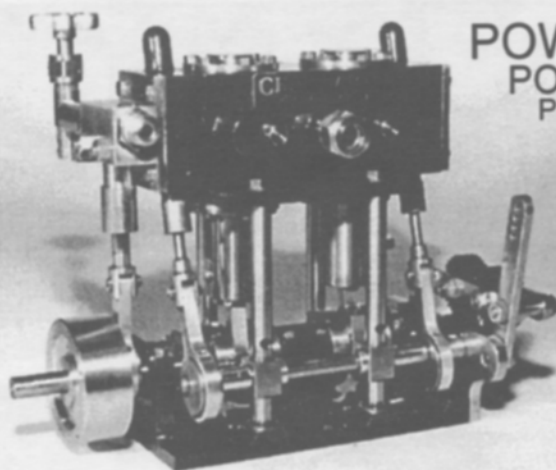
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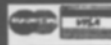
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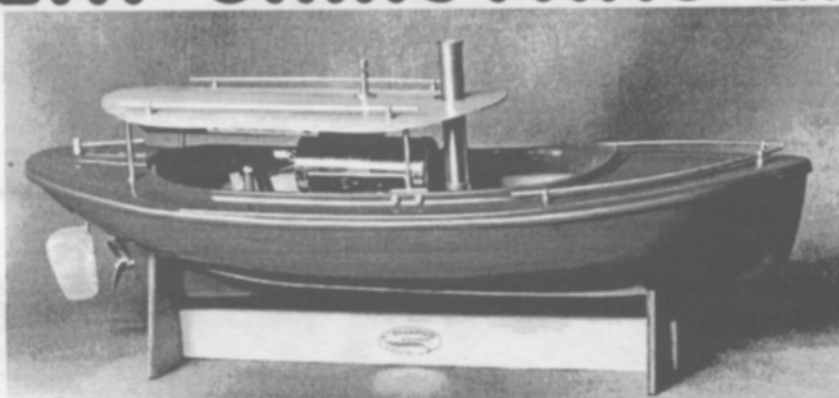
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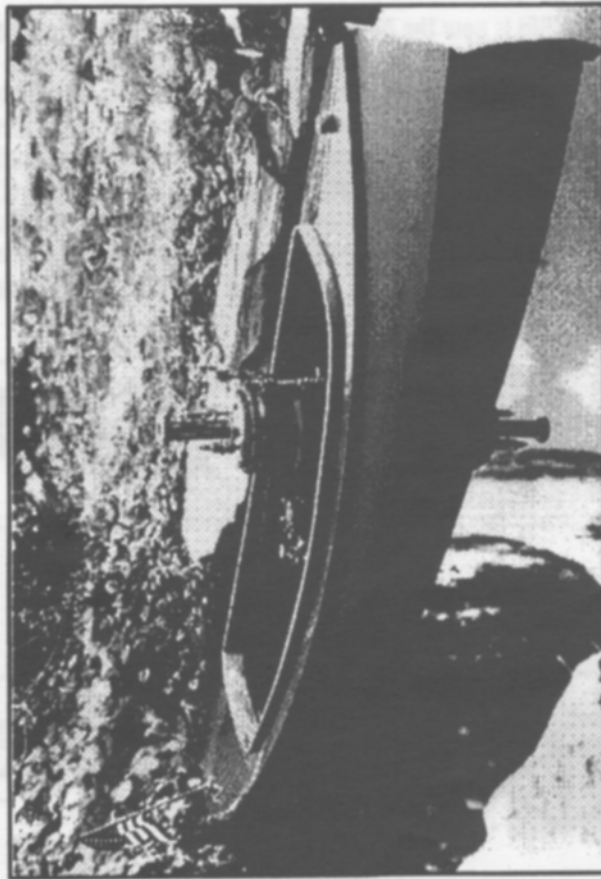
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Diana Steam Launch

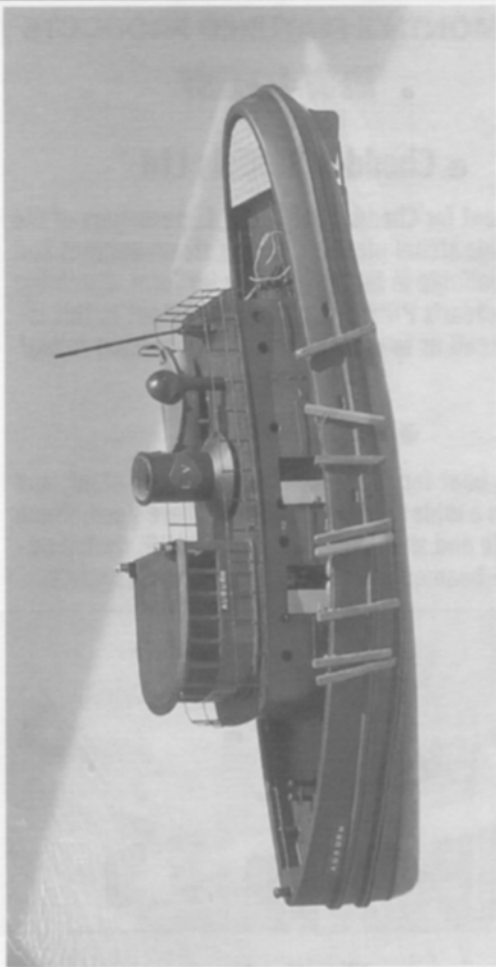
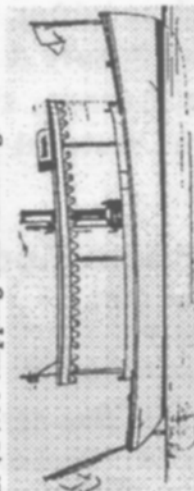


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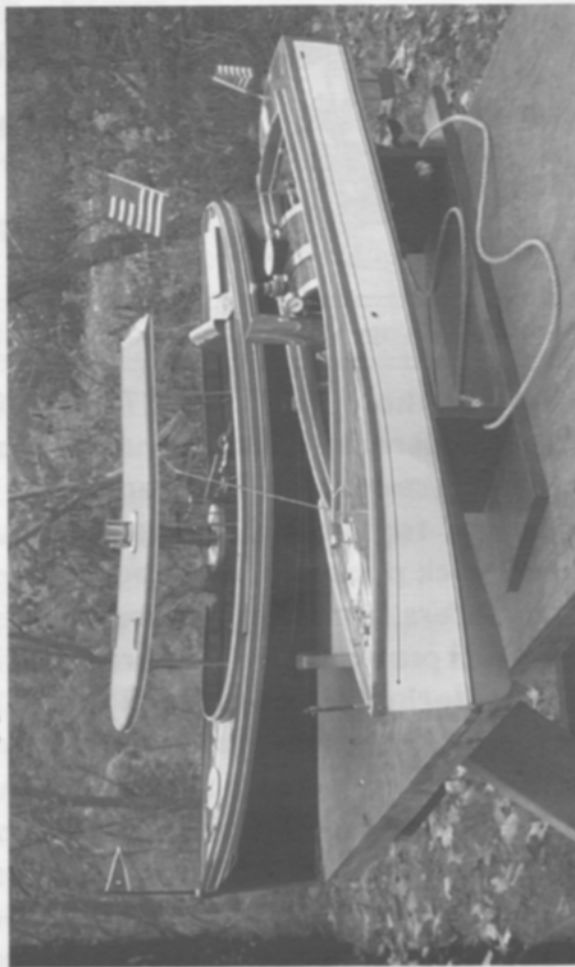
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Above: Ken Parkinson's model of the AUBURN has been featured in previous issues. A very realistic model, both on and off the water.

both photos this page by Ron Brown
Below: Two of Bill Schappert's beautiful steamboats. In the foreground is THE BOY, a very fast boat powered by a Stuart Turner SUN steam engine. In the background is THE PATTY, a traditional steam launch. Both boats were scratchbuilt by Bill. The woodwork and finish will bring gladden the heart of anyone who appreciates fine craftsmanship.



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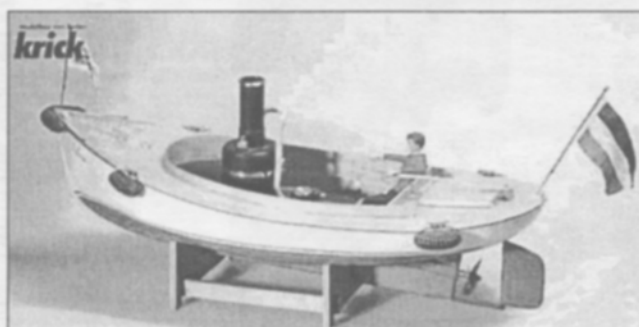
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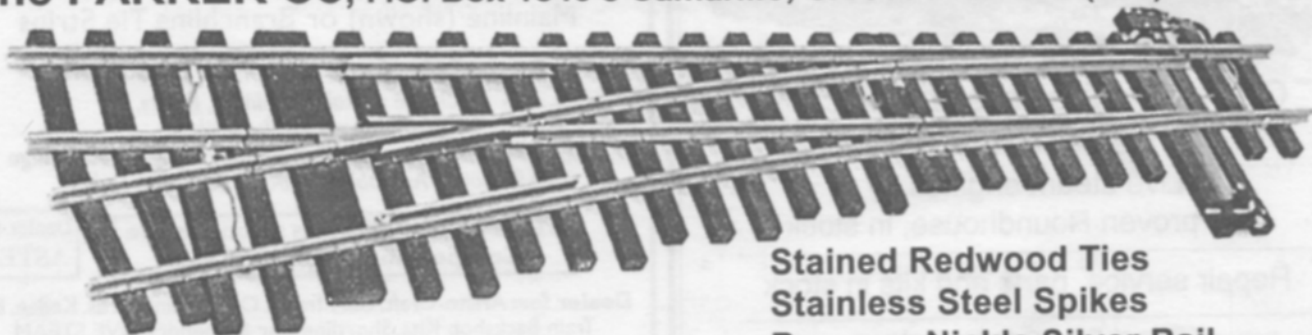


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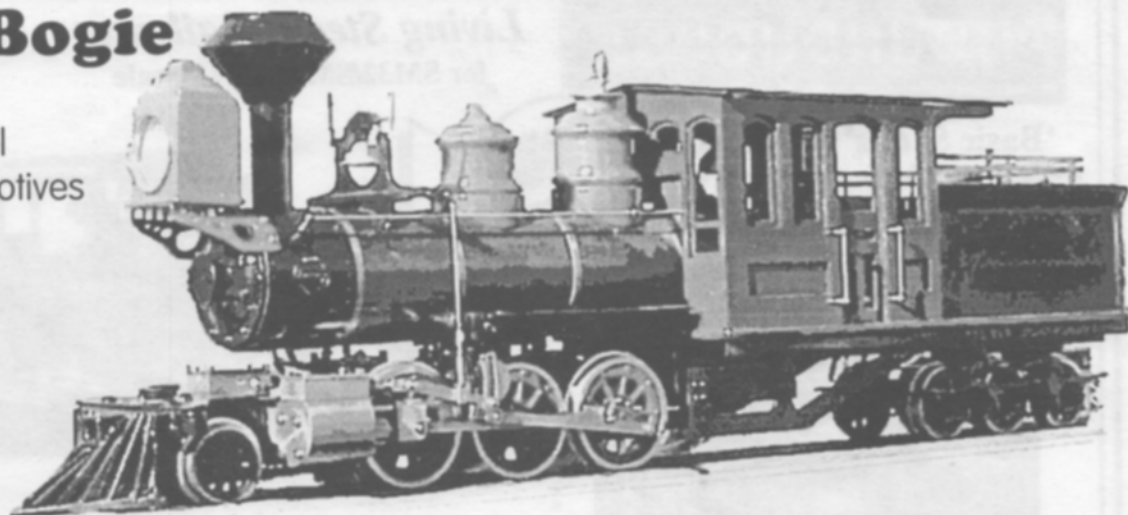


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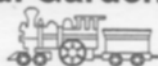


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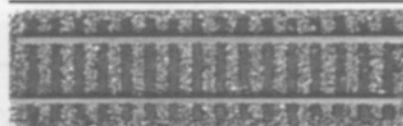
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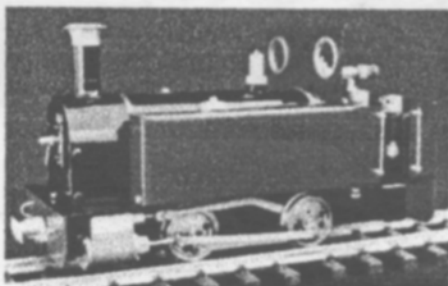


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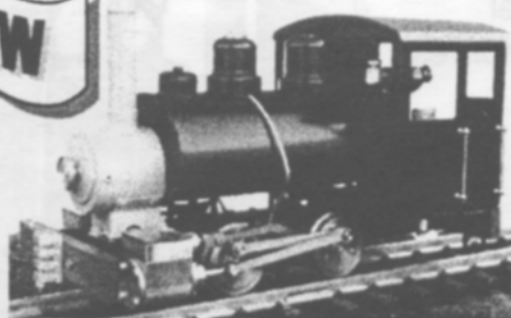


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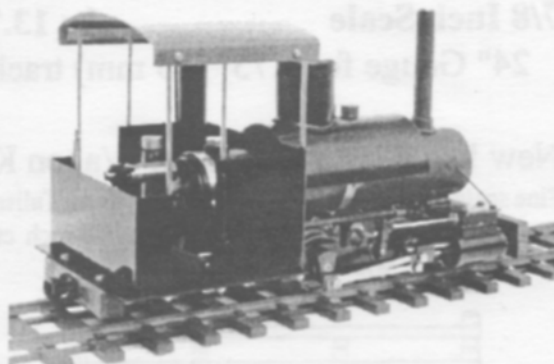


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LIVE STEAM MODEL

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Pressure Gauge



SPECIFICATIONS

Scale: 1.20.3 (15mm/ft)
Gauge: 1(45mm) and 0(32mm)(re-gaugeable)
Weight: 2.2kg
Length: 280mm
Width: 110mm
Height: 135mm
Radius needed: 600mm (2ft)
Boiler: Capacity 100cc single flue

Cylinders: 2-7/16" x 1/2"
Valve Gear: Slip Eccentric
Fittings: Safety valve, Regulator
Firing: Butane Gas
Lubricator: Displacement type
Materials: Bronze cylinders, brass platework, copper boiler (silver soldered), steel frames, stainless steel motion.



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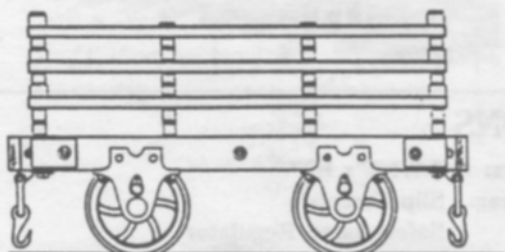


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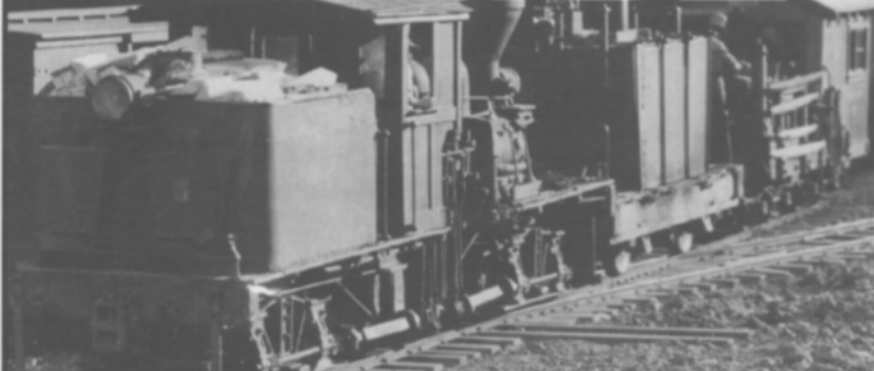
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End of the Line

Thanks to all who responded to my request for feedback in the last issue. We have received many useful comments and suggestions, and we are pleased by the overwhelming outpouring of support. We will use your comments and suggestions to improve the magazine to the best of our ability. This issue should show an improvement in quality of the

b&w photos, the first but certainly not the last upgrade. Keep those suggestions (and articles & photos) coming!

Happy Steaming,

Rn

We Mourn the Death of Dr. Seichi Watanabe - Japan's Greatest Small Scale Live Steamer.

Dr. Seichi Watanabe, the Honorary Chairman of the Yokohama Live Steamers Club, passed away on July 8 at age 87. He had been an active live steamer for over 60 years.

I first met him in 1939, when I joined the Japan Miniature Railway Club, (JMRC). He had completed the design of his first 5 inch gauge locomotive - a Great Northern Atlantic. The chassis was complete and I marveled at the fine workmanship; the drivers, frames, cylinders and trucks were works of art. Dr. Watanabe was an oceanographer employed by the Institute of Physics and Chemistry. He stored his locomotive at the institute and even though the facilities were severely bombed during the war, by some miracle, the chassis was spared and was eventually found beneath a pile of rubble. After the war ended, Dr. Watanabe resumed work on the locomotive and eventually completed it in 1950. It performed flawlessly before the JMRC members and inspired others to build in 5 inch gauge. He next began to write construction articles for beginners Gauge 1 live steam locomotives ranging in complexity from simple side tank models to more complex tender locomotives.

In 1975, Dr. Watanabe was commissioned by Aster Hobby Corporation to serve as their technical advisor when they first considered entering into the small scale live steam locomotive field. He contributed greatly to Aster's success by training their mechanical engineers in the basics of miniature locomotive design. It is no exaggeration to say that his knowledge and guidance brought Aster steam locomotives into existence.

Dr. Watanabe was a great admirer of British steam locomotives. His second 5 inch gauge locomotive was a Great Western 0-8-0T which he completed in 1978. This locomotive's powerful, superb performance was greatly admired by the club members. His next efforts were concentrated on Gauge 1 designs and included the Dean Goods, the Lady of the Lake, the Class M-7, the Royal Scot, the Castle Class, the Pannier Tank, etc. Each of these locomotives appeared on display at various public and club events.

Dr. Watanabe was a true "scratch" builder in the tradition of LBSC. He did the design work, made the patterns, poured the castings, did the machine work and boiler fabrication. His workmanship was as close to flawless as we mortals can approach. He eventually wrote a book on small locomotive design which has become the standard reference text for Japanese live steamers as it contains extensive data and drawings which he collected over the years.

Live steamers from all over Japan attended Dr. Watanabe's funeral to mourn his death. His last project was the City of Truro which was still under construction when he was taken from us. He was a great and good person and we are much poorer by his loss.

Kaoru Suzuki - Chairman
Yokohama Live Steamers Club

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Photos, clockwise from below: Bill Schappert's steam launch, THE PATTY, was carved out of laminated pine blocks. The steam engine is a Saito vertical twin. The boiler was scratchbuilt by Bill and fired by a Saito torch burner. Neatly coiled nylon anchor line on the deck of THE PATTY is held in place with masking tape under the line. The anchor was scratchbuilt by Bill from welding rod. - *photos by Ron Brown* - Natalie Galovics prepares her Roundhouse DYLAN while her proud dad, Steve Galovics observes. *photo by Steve Galovics* - A little CRICKET hauls a string of empty ore cars back to the mine on Charlie Lix's 32mm line in Nevada. *photo by Charlie Lix* - Rudy Kouhoup adjusts the throttle on his scratchbuilt (Rudy built everything except for the pressure gauge!) Pacific. The venue was a summer steamup at Ron & Marie Brown's Catatunk Log & Lumber line in upstate New York. - *photo by Dlanor Nworb*

