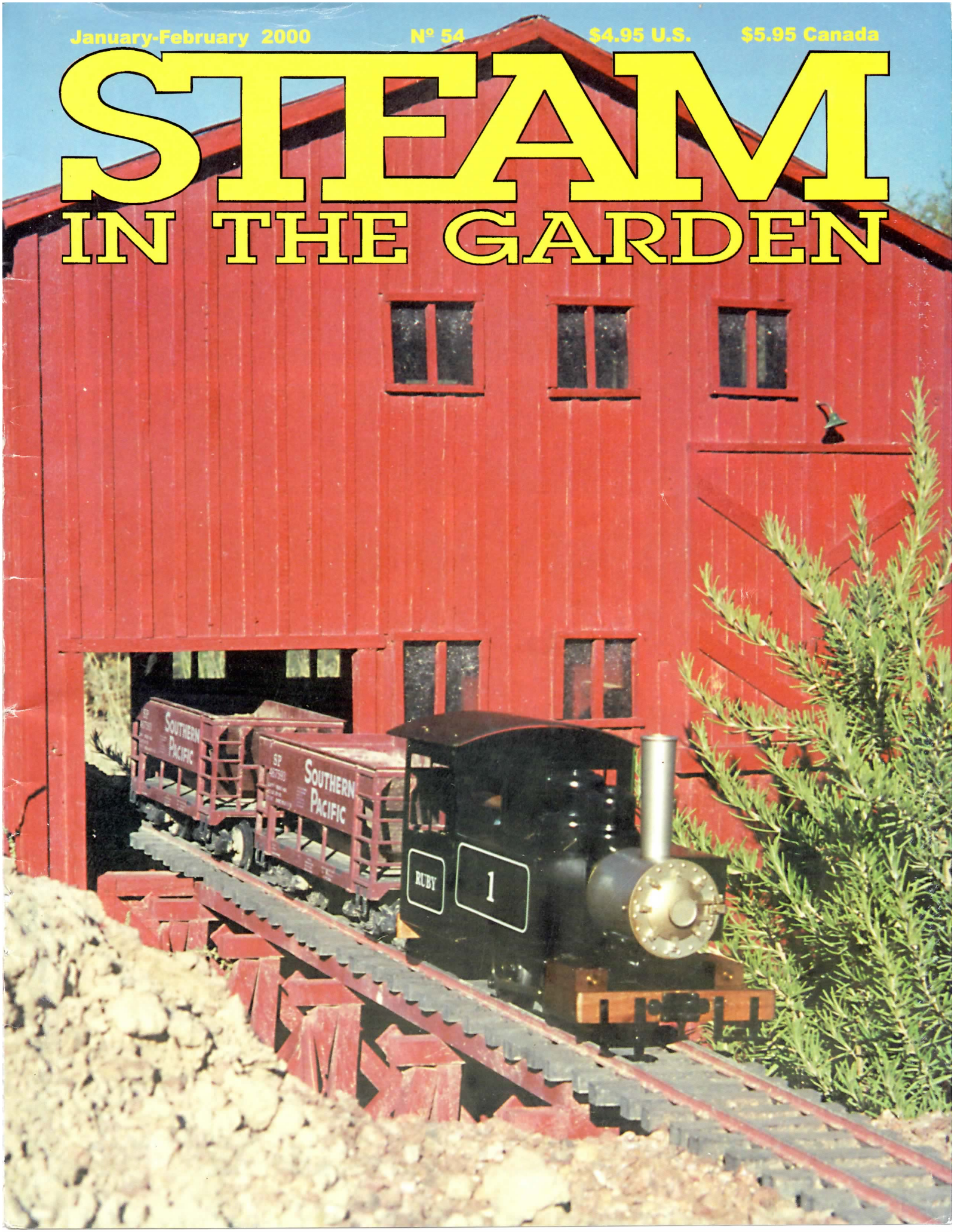
January-February 2000 Nº 54 $4.95 U.S. $5.95 Canada

STEAM IN THE GARDEN



WORLD'S FINEST GAUGE 1 LIVE STEAM KITS & RTR

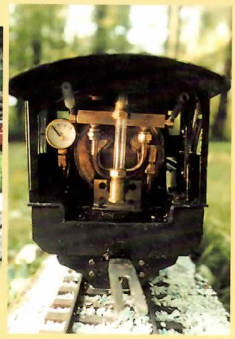
ASTER HOBBY

BEAUTY ❄ INVESTMENT ❄ A PLEASURE TO OWN

QUICK DELIVERY ON ALL MODELS

ASTER HOBBY

THE ASTER USRA 2-8-2 LIGHT MIKADO - KIT OR BUILT



MIKADO SPECIFICATIONS

- SCALE 1:32
- MIN. RADIUS 6'6"
- ALCOHOL FIRED
- FITTINGS INCLUDE: SIGHT GLASS, PRESSURE GAUGE, CHECK VALVE & MORE
- LENGTH APPROX. 30.5/16"
- SUPPLIED UNLETTERED, SELECTION OF DECALS AVAILABLE

(specifications subject to minor changes without notice)


BR 03


T3/BR 89


LMS JUMBO


LNWR JUMBO


LT90 PANNIER

C&S MOGUL


BR 98 GLASKASTEN


JNR C57


JNR 9600


JNR C11


JNR C56

CATALOG & MANUAL $15

❄ ❄ ❄ ❄ ❄

DIAMONDHEAD 2-HOUR STEAMUP VIDEO $29

U.S. REPRESENTATIVE & DISTRIBUTOR

HYDE–OUT MOUNTAIN LIVE STEAM 89060

CALL US FOR INFORMATION

NEW RUMLEY ROAD JEWETT, OH 43986

740-946-6611 ❄ www.steamup.com/aster

AVAILABLE FROM THESE DEALERS

❄ ❄ ❄ ❄ ❄

Sunset Valley RR
13428 209th SE
Issaquah, WA 98027
425-255-2453

S.T.E.A.M.
PO Box 123
Windsor, CA 95492
707-838-8135

West Lawn Locomotive Works
PO Box 570
Madison, WI 53701
608-231-2521

Cross Creek Engineering
PO Box 191
Spencer, OH 44275
800-664-3226

IN CANADA

Gauge 1 Lines
10 Porter Street
Stittsville, Ontario K2S 1P8
Canada 613-836-6455

Doubleheader Productions
3725 Pageant Place
Dallas, TX 75244
972-247-1208

Sulphur Springs Steam Models
PO Box 6165
Chesterfield, MO 63006
314-527-8326

North Jersey Gauge One Co.
8 Spring Valley Road
Park Ridge, NJ 07656
201-391-1493

Rio Pecos Garden Railroad Co.
27136 Edenbridge Court
Bonita Springs, FL 34135
941-495-0491

STEAM IN THE GARDEN
with Steam on the Pond

Vol. 10, Nº 6
Issue Nº 54
January/February 2000

Articles

Departments

FRONT COVER: The Elkhorn Silver Mill, located at Coolage, Montana circa 1922, is recreated on Lou Banning's Pahrump Valley & Amargosa R.R. Lou Banning and Robert Peterson built this 1:24 scale model. The scale mill is 4' wide, 9' long and stands 30" tall. The model is situated on a hillside and slopes downward to ground level at a 30° angle. The roof is made of 1006 scale panels of tin roofing. Ruby is seen here retrieving ore cars that have been unloaded. The photographer notes, "I can't explain how modern ore cars with Santa Fe markings got there in 1922. Obviously neither Lou or I thought about that. We were just trying to get interesting photos." ***photo by Clark Lord***

OUTSIDE REAR COVER: Clockwise from upper left: Walt Swartz grins from ear to ear over his new Aster Light Mikado. ***(photo by Bob Osterhoudt)*** A delightfully lined Roundhouse Cambeltown & Macrihanish locomotive pulls a train of Welshpool & Llanfair passenger stock on the Haytor Granite Tramway in Torquay. ***(photo by Tag Gorton)*** Don Beach's delightful 2-truck Shay crosses a trestle with the local freight. ***(photo by Don Beach)*** Ken Parkinson's tug Auburn casts a reflection on a very still pond. ***(photo by Ken Parkinson)*** Richard Finlayson's beautiful new Legend American 4-4-0 struts her stuff. ***(photo by Richard Finlayson)***

Publisher/Editor
Ron Brown

Upstairs Maid
Marie Brown

CAD & Other Drawings in This Issue
Harry Wade • Charlie Mynhier
John Thomson • Larry Bangham

Regular Contributors
Larry Bangham ..... California
Crankpin ..... The South
Rich Chiodo ..... New Hampshire
Tag Gorton ..... England
Harry Wade ..... Tennessee
Les Knoll ..... Illinois
Ken Parkinson ..... Florida

Steam in the Garden (USPS 011-885, ISSN 1078-859x) is published bimonthly for $27.00 ($34.00 Canadian, $35.00 overseas) per year (6 issues) by Steam in the Garden Inc., PO Box 335, 6629 SR 38, Newark Valley NY 13811. New subscriptions please allow 6 - 8 weeks for delivery (overseas via surface mail may take longer). Direct correspondence to P0 Box 335, Newark Valley NY 13811. Periodicals postage paid at Newark Valley, NY and additional mailing offices.

POSTMASTER: send form 3579 to Steam in the Garden Inc., P0 Box 335, Newark Valley, NY 13811. Printed in USA.

USA, Canadian and overseas subscriptions may be sent to **Steam in the Garden Inc., PO Box 335, Newark Valley, NY 13811.** Phone, fax and e-mail subscriptions gladly accepted. We accept VISA, Discover and MasterCard.

In the U.K., contact Brandbright Ltd., The Old School, Cromer Road, Bodham, Near Holt, Norfolk NR25 6QG — phone 01263 588 755 FAX 01263 588 424

In Australia, contact RCS, PO Box 1118, Bayswater, Victoria 3153 AUSTRALIA — phone/fax (03) 97 62 77 85

Items for review may be mailed to P0 Box 335, Newark Valley, NY 13811—or sent via UPS or FEDEX to 6629 SR 38, Newark Valley, NY 13811.

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

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

2000 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.

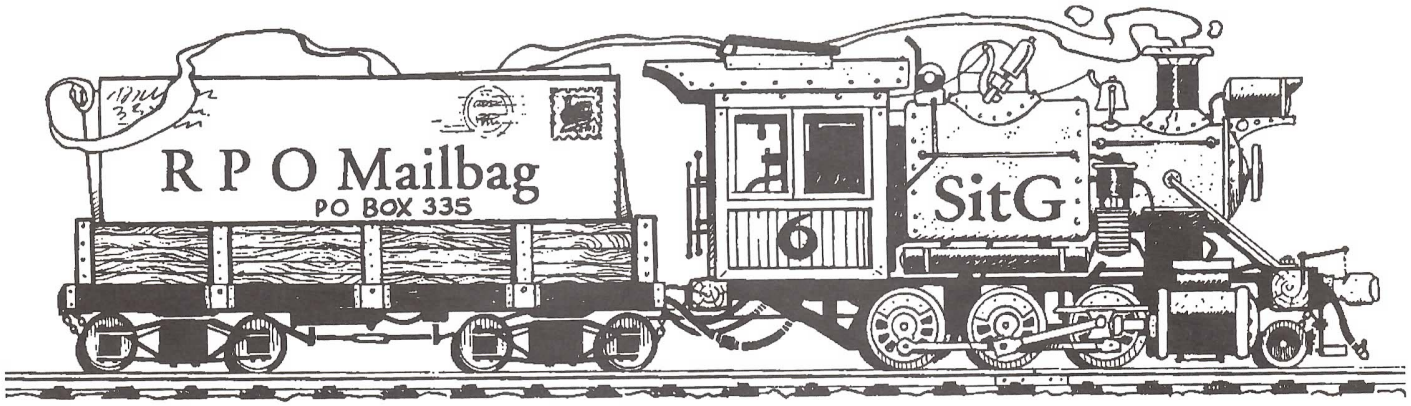
February 13, 2000 - Cabin Fever Breakout V, Baird Community Center, 5 Mead St., South Orange NJ, 10 a.m. til 4 p.m. For Steamboat Captains, Crew, Builders, Friends and Wannabes. Swap & sell, socialize, plan local shows and meets, videos, photos and more. Free admission and parking, free coffee and donuts.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

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

May 7, 2000 - 4th Annual Large-Scale & Garden Railway Show & Sale, Liverpool Elks Club, Syracuse NY, 9 a.m. to 4 p.m. Operating live steam demonstration, operating layout.For more info and/or table reservation, contact Gordon Davis, 315 Viking Pl., Liverpool NY 13088 - (315) 451-3199. Presented by the Central NY Large-Scale Railway Society.

July 5 - 9, 2000 - The 16th National Garden Railway Convention, to be held at the Town and Country Hotel and Convention Center, 500 Hotel Circle North, San Diego, CA 92108. Info: San Diego Garden Railway Society, P.O. Box 178343, San Diego, CA 92177-8343 or at our website: www.sdgrs.com/r2k We will have live steam demonstrations.

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.)



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.

* * * * * *

FLOYD VISITS PLS

Rahns, Pennsylvania

Dear Ron,

This note is directed to your subscribers who are familiar with the Pennsylvania Live Steamers. Anyone who has visited the site knows we border teh Perkiomen Creek. They also know our gauge 1 track is mid-property, approximately 280' from and 21' above the creek. When hurricane Floyd visited in mid-September the creek waters kept rising until 1/2 of the property was under water. Our gauge 1 track was completely covered, but sustained no damage. We didn't get any photos of the peak of the flood because we couldn't get near the place, but I did get this photo after the floodwaters subsided.

Harry Quirk

Myerstown, Pennsylvania
via e-mail

Dear Ron,

I would like to thank Bob & Carol at Sulphur Springs Models for the great service that they afforded me with a recent problem I had with an item I had purchased from Sulphur Springs. Their prompt attention to my problem, and quick refund, makes them high on the list of suppliers that are just great to do business with in the live steam arena.

Richard Sawyer

* * * * * *

Charlotte, North Carolina
via e-mail

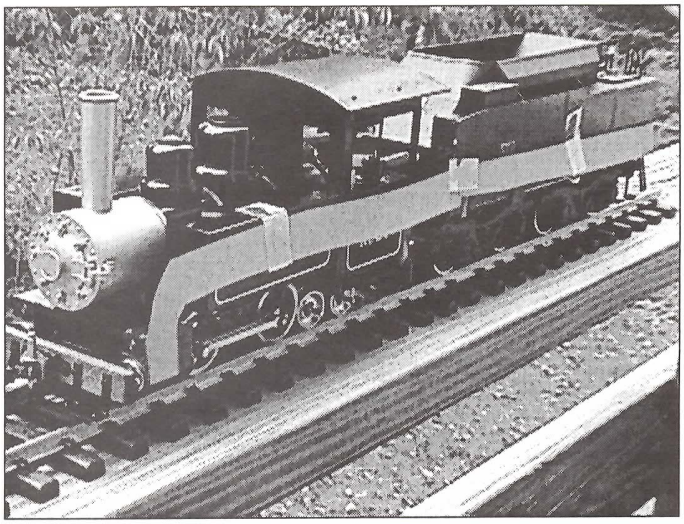
Dear Ron,

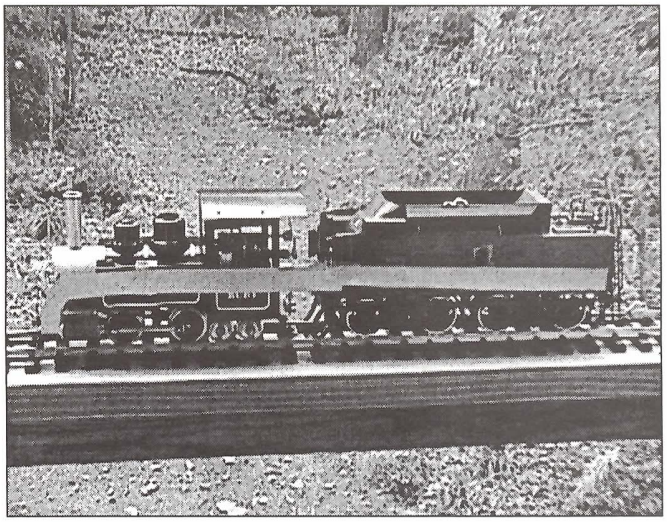
I've been working day and nite to convert this small loco into a Southern Pacific GS4 Daylight. Now totally completed, it's "Eat your hearts out Dan, Hans and Sam!!!".

Jim Burns

Very clean and accurate conversion, Jim. Surely it will be the envy of all attendees at Diamondhead 2000. I had no idea you had been honing your skills and had become such an accomplished machinist and metal basher! - ed.

* * * * * *





United Kingdom
via e-mail

Hello Ron,

Although not at present*** an active live steamer in the garden I browse your web site from time to time.

The article on the tiny 0-4-0VB locomotive VICTORIA of the Plynlimon & Hafan Railway caught my eye because it was built just 400 yards from where I am sitting at home right now. A small part of what was once the main erecting shop of John Slee & Co. still exists within the much expanded industrial premises of Kitson's Insulations Ltd., part of which is sub-let to a builder's merchant & garden supply yard. In the century or so between John Slee & Co folding and the present time the site has been the town Gas Works, a road haulage (USA =trucking) depot and a truck driving school.

Slee's was not situated at Warrington, as the VICTORIA article and many British rail history books suggest, but within the town boundaries of Newton-le-Willows. It actually lies in a district called Earlestown after Sir Hardman Earle, an early Liverpool & Manchester Railway director. Earle established a large railway wagon works (car shops) there, along with a whole community of houses, shops and churches etc., for the London & North Western Railway. Earlestown passenger station still enjoys up to six passenger trains per hour on weekdays. Slee's old factory overlooks platforms 5 & 6 which serve the Manchester to North Wales and London routes and it had its own siding until 1966. The old firm's name, written in large letters on a brick gable end, periodically emerged through successive generations of over-paintings well into the 1960s, when it was clad in galvanised metal.

I think that the absence of a main Post Office at Earlestown until the mid 19th Century was the cause of the town's lack of identity in the days when a locomotive builder's plate was also a form of advertising the product.

I have not got a photo which shows VICTORIA's builders plates in readable form, but Slee used to cast its name in the beds of much of its machinery as "John Slee & Co., Earlestown, Lancs.". The last word was short for the old County of Lancashire which surrendered Newton-le-Willows and much other territory to the new County of Merseyside in 1974. Some of Slee's machinery was only scrapped in the 1960's and I remember it well.

Not too much off topic I hope, but whilst John Slee & Co.'s VICTORIA was a miserable failure, the firm had much more success with its cast iron and steel beds for machine tools, many of which travelled just half a mile down the track to the Vulcan Foundry, Newton-le-Willows. There they were used in the production of thousands of steam locomotives for all over the world, including some 2 ft. gauge examples for the Ffestiniog and North Wales Narrow Gauge Railway Cos. Incidentally, some very early Vulcan Foundry builder's plates of the 1830's showed 'Warrington', one still existing in our local museum.

Slee's machine tools might well have been used when Vulcan built the O-4-4-0T Double-Fairlie MOUNTAINEER for the Denver & Rio Grande in 1872. However, they were well and truly gone when Vulcan's very last complete locomotives --- flameproof, dual-powered battery/diesel, narrow gauge ore-haulers --- left the works in 1983 for the Climax Molybdenum Mines, also in Colorado, where DSP&P/C&S Mason Bogies used to tread the iron between Denver and Leadville.

Kind regards,

Eddie Bellass,
Earlestown,
Newton-le-Willows,
Merseyside,
UK

(*** in years now past, I drove everything from Mamods, via 5", and 15" gauge live steamers to preserved, 1:1 scale 2ft gauge tank locos and even an ex-BR Pacific. The Mamod, at least, is scheduled for a renaissance!)

* * * * * *

Houston, Texas
via e-mail

Houston area steamer Jim Crabb sent in this exchange - ed.

Question: Has anyone had any experience with installing a superheater in an Accucraft Ruby? If so, could you please share your information, photos, sources etc. Any help would be greatly appreciated. Randy Roberts

Answer: I have a super heater installed compliments of Charlie Mynhier, who couldn't stand to watch how poorly "Ruby" was performing initially. My original pictures didn't turn out very well because I wasn't prepared and didn't have a macro lens. I plan to disassemble the engine and retake the pictures during the next couple of weeks.

In the meantime, the operation was fairly straight forward. The line which goes under the boiler was cut at both ends and run through the flue and resoldered. You have to file a notch in the plate that connects the burner to the backhead. The whole operation took less than two hours (you have to understand that Charlie is the most proficient machinist I know in this hobby) and was done during a steamup in Dallas last month using minimum tools.

Although the burn time remains about the same for "Ruby" at 18-22 minutes, now the steamup time is about 8 minutes, with about 13 minutes "run" time. Before this operation the steamup time was closer to 14 minutes and the run time was less than 8 minutes.

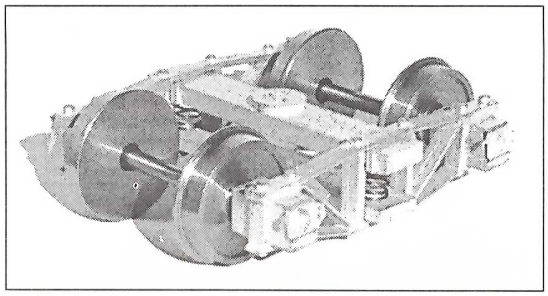
Follow up question: Jim, Why do you reckon adding the superheater has reduced the steamup time from 14 to 8.5 minutes? One wouldn't expect it to change. But certainly the run time should be longer with a superheater. Peter Trounce, Toronto.

Answer: Peter et al, technically "steamup" probably wasn't the correct term. I guess we usually use that term to mean the time it takes to lift the safety. I personally use the term "steamup" to include the time from light up until the engine actually moves. The "Ruby" is so inefficient (out of the box) that after the steam is up it takes another 5-6 minutes to get things rolling. This is because the steam coming out of the oiler is cooling rapidly -- traveling in the line under the boiler -- before it gets to the working part of the engine. The superheater not only maintains the heat, it dries it out, making the steam hotter and more efficient. Hence, things get moving much faster and the run time is increased.

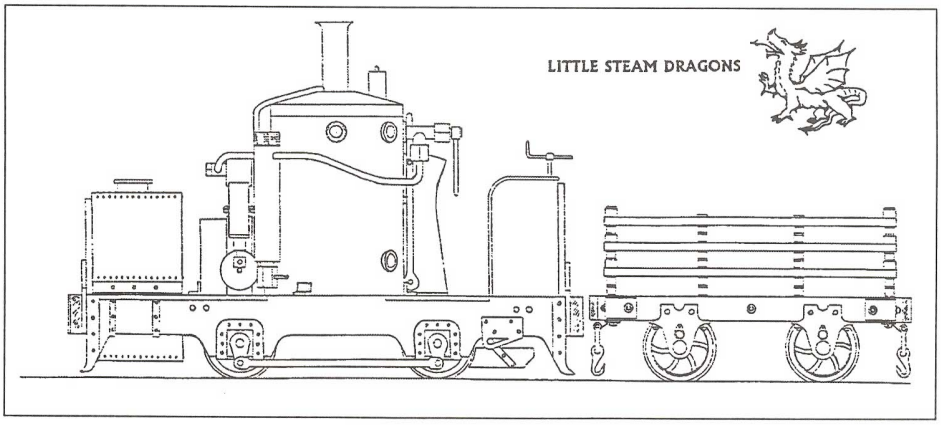
Jim Crabb
Houston, Texas

WHAT'S NEW?

7/8n2 Railway Equipment Co., 54 Claybrook Rd., Rocky Mount VA 24151 ● phone: 540-483-9230 ● e-mail: seven8n2@aol.com ● web site: www.largescale.com/seven8n2 announces their second offering of 7/8 inch scale Maine freight trucks for 24" gauge. The "diamond" style common bolster arch bar truck is a replica of those used on the Phillips and Rangeley Railroad and other Maine narrow gauge. 7/8 inch scale model railroads are 13.7:1 proportion, and operate on 1.75" or 45mm gauge track with the correct scale to gauge ratio. The truck is a simplified kit with precision white metal cast parts and Sierra Valley 7/8 inch scale 20" wheel sets. Wood beams of the prototype are simulated with metal castings. Trucks are fully sprung and include plastic journal bushings for smooth operation. Assembly can be done in less than 30 minutes with no tools other than hobby files for clean up of castings, and a bit of CA adhesive to secure the journal lids. Part number is 78TK15 ● Price per pair is $45 plus $4 S&H in US. Available only from 7/8n2 Railway Equipment Co.

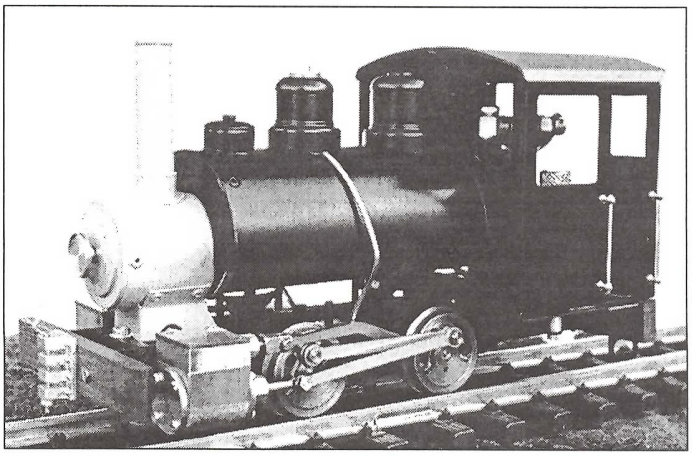


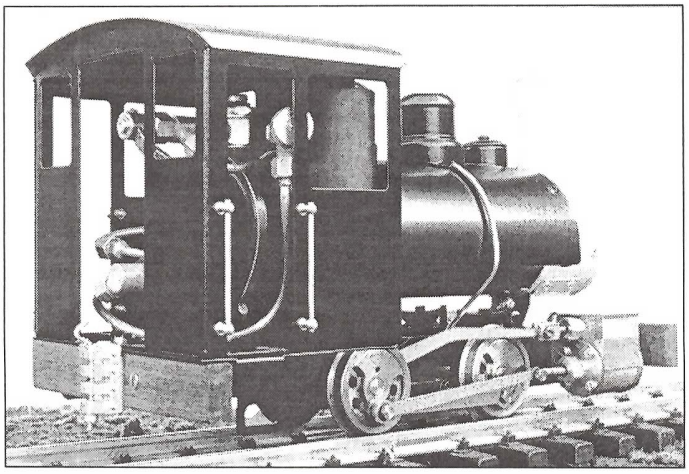
Live Steam Quarry Engine in 7/8n2 ● Little Steam Dragons of Telford, UK has announced their first offering in 7/8" scale, which represents models of two foot gauge trains operating on gauge 1 (45mm) track. A DeWinton flat bed, vertical boiler engine will be produced in limited quantities, available in the first quarter 2000. The model follows closely prototype quarry locomotives produced in the latter half of the 19th century by the DeWinton Co. of Caernarfon, Wales. Some examples still survive, such as the 1877 "George Henry", which resides at the Narrow Gauge Railway Museum at Tywyn. These were small open engines with short wheelbase which weighed in the 3 to 5 ton range. Typically they were used to haul small 4-wheel slate wagons in quarries such as at Penrhyn. The Little Steam Dragon DeWinton features a laser cut steel frame, disc drivers with outside cranks and connecting rods. Wheels are the correct 7/8" scale profile with fine scale flanges. Vertical boiler is gas tired multi-tube design with a ceramic burner, and an estimated 15 minute run time. The engine is fitted with displacement lubricator, manual regulator and sight glass with blowdown valve. Power is transmitted to the wheels by two oscillating cylinders with a manual reverse lever mounted on the footptate. A 4:1 gear ratio is built into the drive to give smooth slow-speed performance. Model includes wooden buffers and planks, etched brass dummy water tank and coal bin with rivet detail and a number lost wax detail castings. Overall size is approximately 10" long x 3.85" wide x 6.70" high. The gas tank is hidden in the coal bin. The paint job will be black with red trim.



The DeWinton will initially be offered as a complete train set, including three assembled Welsh slate wagons by L.S.D. & Talisman. The slate wagon is a small flat car with wood crib sides and features lost wax cast metal fittings and proper 1/8" dia. curly spoked wheels. Each wagon measures 6.3" long x 3" wide x 3.25" high. Cars are light grey with black ironwork. Couplings are hook and ring type as used on quarry trains. The projected cost for the engine and three wagons is USD$1340, plus shipping from the UK. Availability in North America will be through the US agent, 7/8n2 Railway Equipment Co., 54 Claybrook Rd., Rocky Mount, VA 24151. (See their ad in this issue for contact information) In UK, Europe and Australia, contact Little Steam Dragons, Signal House, Horton Lane, Horton, Telford, Shropshire, ENG, TF6-6D. e-mail: littlesteamdragons@cwcom.net.

Roundhouse Engineering Co. Ltd. (see ad in this issue for dealer list & contact information) introduces SAMMIE, the second in their new range of low cost locomotives. Though freelance in design, SAMMIE is styled after the many small to medium sized North American



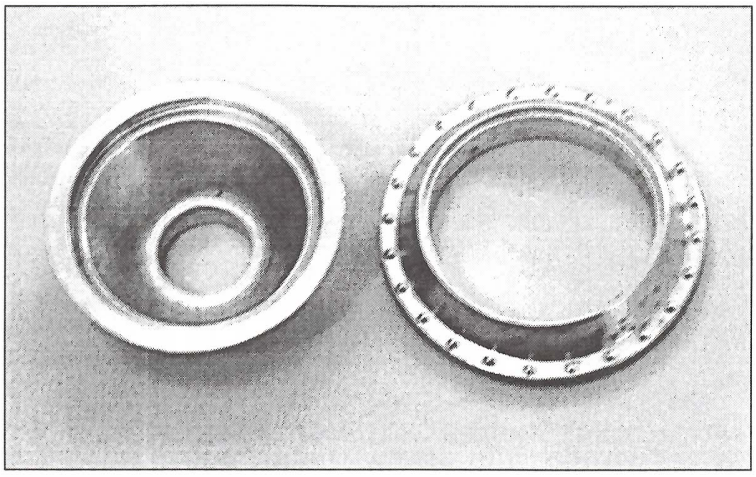


style saddle tank locomotives from such builders as Baldwin and Porter. Personalize it to your own requirements with the additional parts and accessories available. Specifications for basic model: * 0-4-0 inside framed chassis with double acting slide valve cylinders operated by slip eccentric valve gear. * Internal gas firing. * Controls fitted as standard are: steam regulator, safety valve, displacement lubricator and gas regulator. * Dimensions are: length 280mm, width 118mm, height 145mm, weight 2.1Kg. * Satin black livery with silver grey smokebox and red oxide roof. * 32mm or 45mm gauge (non adjustable). NOTE: Insulated wheels are not available on this model and a gas filling adaptor is required.

To further enhance and customise your SAMMIE, Roundhouse offers the following accessory packs for you to fit yourself. These come with all necessary parts and full instructions (except for the r/c fittings kit which does not include the radio control equipment). * Pressure gauge with syphon. * Water top up system (including water gauge). * Radio control fittings kit. Contact Roundhouse Engineering Co. Ltd. directly, or one of their dealers for more information and pricing. Please mention that you saw it in SitG.

HARTFORD PRODUCTS, INC. and SIERRA VALLEY ENTERPRISES (see their ads in this issue for contact information) have embarked on a joint venture known as The SEVEN EIGHTS CONSORTIUM. (SEC for short.) The purpose of this joining of forces is to produce a new line of very high quality 7/8n2 kits and ready to run industrial two foot narrow gauge equipment. HARTFORD PRODUCTS will produce the cars in kit form while SIERRA VALLEY will offer the ready to run models. It is intended that all cars produced in this series will be offered to the model railroader in both forms. Only the finest materials will be used in the production of this rolling stock. The wood used in the construction of these cars is a type of mahogany that has scale grain and weathers very realistically. The castings are produced by HARTFORD PRODUCTS and are made in Duracast II, a very hard and durable alloy. The detail of these custom castings is second to none. The steel wheel sets are produced by SIERRA VALLEY and are designed using two foot narrow gauge industrial prototypes. These wheel sets follow all NMRA standards proposed for 7/8n2. The SEC intends to produce some free lance industrial cars using known construction methods and practices of the era being modeled. There will also be models of prototype cars produced such as the early Gilpin Tramway flat cars and ore cars. The majority of this two foot narrow gauge rolling stock will reflect American industrial railroading.

Brass Bonanza! Pete Thorp of Trackside Details, 1331 Avalon St., San Luis Obispo CA 93405, has introduced yet another magnificent brass detail casting set (2 pieces) for our modeling pleasure. TD-189 consists of a sharp, crisp, clean medium sized Diamond Stack for steam locomotives. Pete is a fellow steamer, and he has contributed much to our hobby. He mentions that this new stack casting can be used with the TD-168 stack base and a length of K&S brass tube to make a realistic logging or early steam loco stack. Way to go, Pete!



The Fitter's Bench

by Crankpin

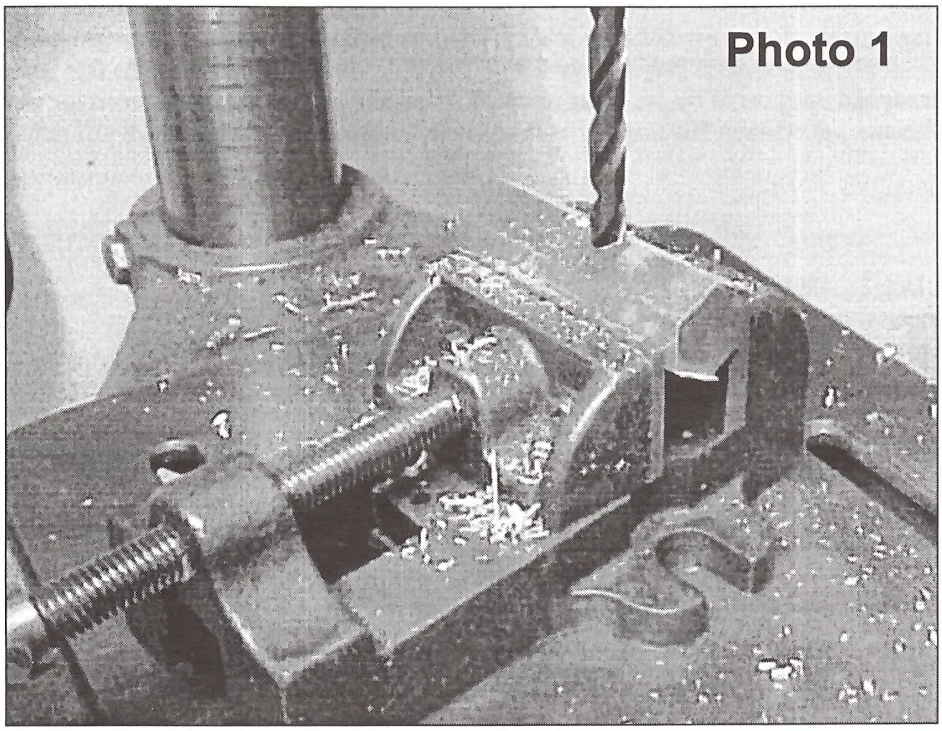
On Becoming A Toolmaker...

The Sermon

No doubt you've all seen one of those adverts for locomotives for sale which tout the engine as "highest caliber workmanship, made by a retired toolmaker . . . . . " Why is it that people believe being a "toolmaker" necessarily has anything to do with the quality or value of an engine? The answer is that "toolmaker" implies someone who has the training, experience, and ability to produce work that is not only very accurate but is beautiful to look at and therefore more valuable.

However, as a live steam builder (or model engineer, or whatever you prefer), each project, no matter how modest, can be counted on to bring unique challenges, and in order to meet these challenges one must often make one's own tools. This is actually a time-honored tradition of our hobby and one that allows...no, ***requires***...that we become "toolmakers" in the process. Fancy that!

A 'tool' in workshop parlance doesn't mean hand tools in the usual sense, although it certainly could be, but rather it means any device which aids in making other parts or machining. In the industrial world these 'tools' are also known as 'patterns', 'templates', 'jigs, or 'fixtures' and those names will stick with us here in the amateur world also. All of them are essentially parts needed to make or fit another part, and making these tools is an exercise which should be expected as a part of a live steam building experience. This may sound a bit intimidating but it's not really, if taken one step at a time.



For example, those of you with small scale model railroading experience surely have seen or heard of the drive wheel quartering jig, have you not? This is a very good example of a simple device which is built for no other reason than to make (or assemble) another part of a locomotive project. It is a TOOL pure and simple, and if you were to make one of these, and no doubt some of you have done so, you would then be a toolmaker.

Sometimes your project will call for a special tool that isn't available off the shelf or one that is no longer being made. Sometimes it might be a tool that is available commercially but which can be made at home for a considerable savings. Sometimes it might be a tool that no one makes but which is required to make some part of your project, or maybe it's simply a matter

of being able to say "I made that myself." But for whatever reasons, a tool must be made. So it is that I propose that we make our first tool, and the first candidate will be a brass hammer.

But why a brass hammer? As I said in a previous issue, there will be times when you encounter in your modeling work the need to give something a whack, yet minimize the possibility of hammer marks. Brass is just the thing because when used against steel or iron it will deform slightly rather than mark the work. In addition, brass is easy to machine and requires no special material, hardening, or tempering to get right such as a steel hammer would. Why not aluminum? Well, this is after all a hammer and it does need some heft, doesn't it? I chose this as a starting point because it is very easy to make using simple, readily available, and inexpensive materials, and it is also a very useful tool. I use my own virtually every time I step into the workshop. Now let's proceed make our hammer.

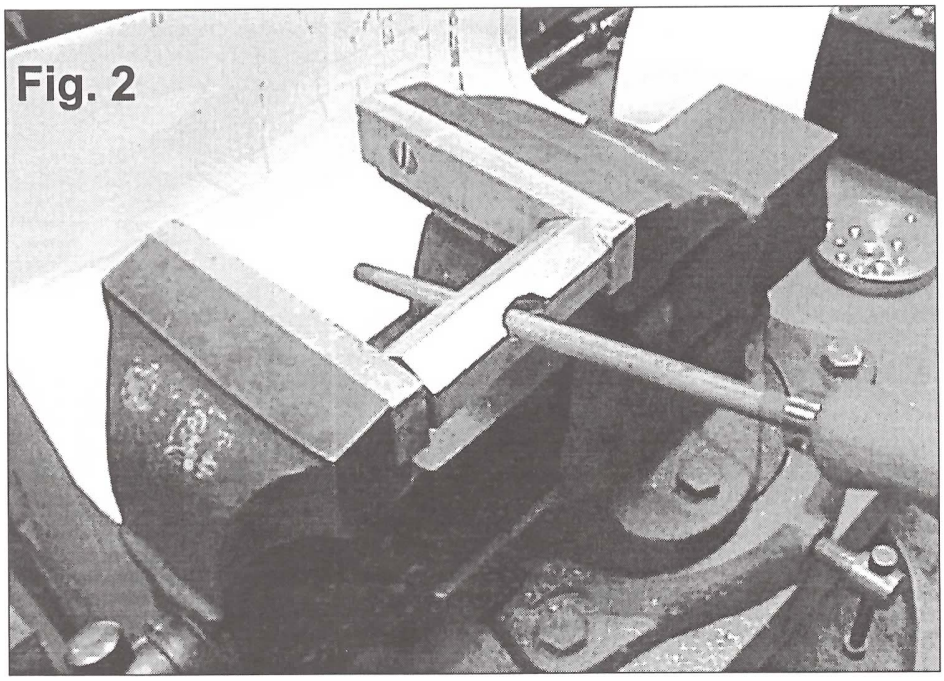


Fig. 2

First we will need a Handle, preferably one of well seasoned hardwood. You can of course carve this yourself (just joking), but usually a visit to your local hardware, DIY, or tool shop will bring you what is needed. Select one that is intended for an 8 to 12 oz. Machinist's or Ball Pein hammer to give a handle length of approximately 10" under the head.

Although a hammer of 8 to 12 ozs is twice as heavy as the one we intend to make, I have found that the larger handle feels better in the hand than the size normally found on 4 to 6 oz. hammers.

Look for a handle with a solid, as opposed to split, stem (the "head" end) and take care that the handle includes a small metal wedge for expanding the stem. You will see that most hammer handles have oval shaped stems to fit the oval holes in typical forged hammer heads.

I do not recommend making the handle of metal, or pipe, despite the fact that drilling for and fitting the head would be less difficult than that of a wooden handle. The metal handle will not be nearly as comfortable in the hand as will wood and the overall weight distribution of the hammer will be changed, resulting in the reduction if not elimination of the "feel" you get from the blows.

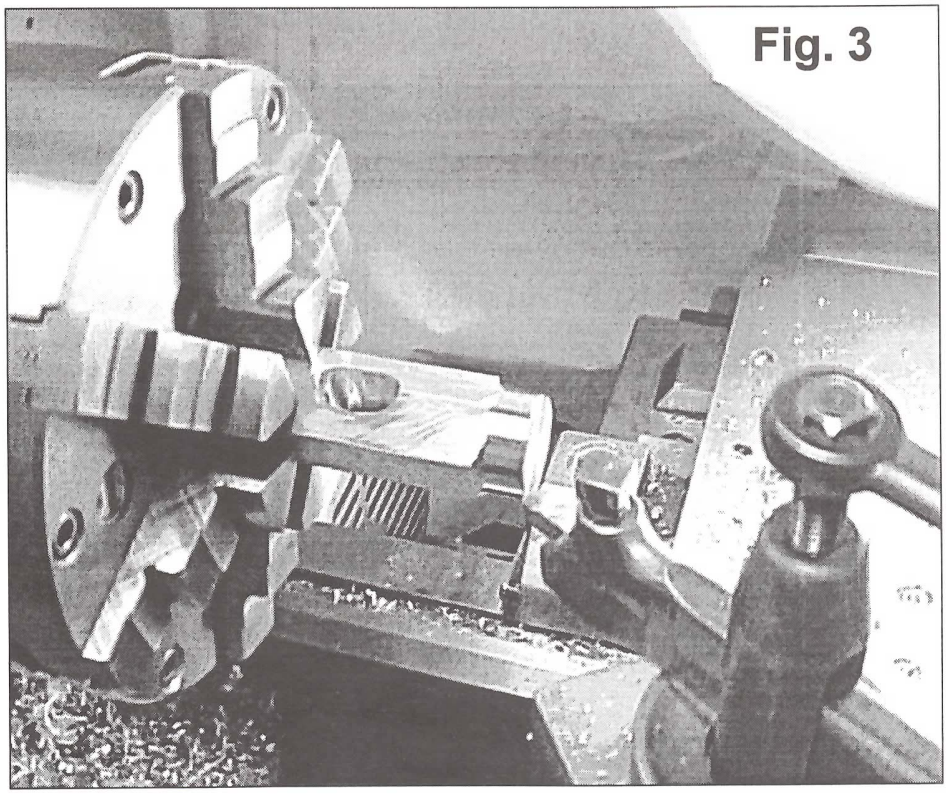
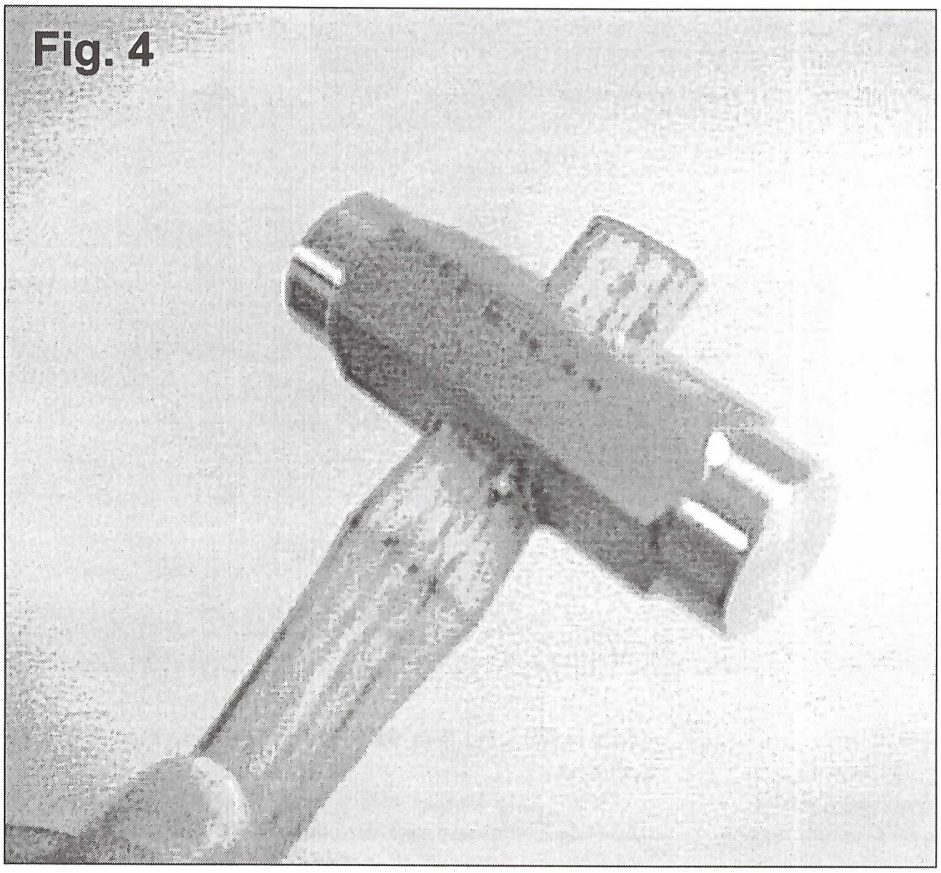


Fig. 3

We want the largest proportion of the weight of the hammer concentrated in the head, not along the handle. Over the life of the tool you will be repaid for the little extra time it will take to fit a proper wooden handle to your hammer.

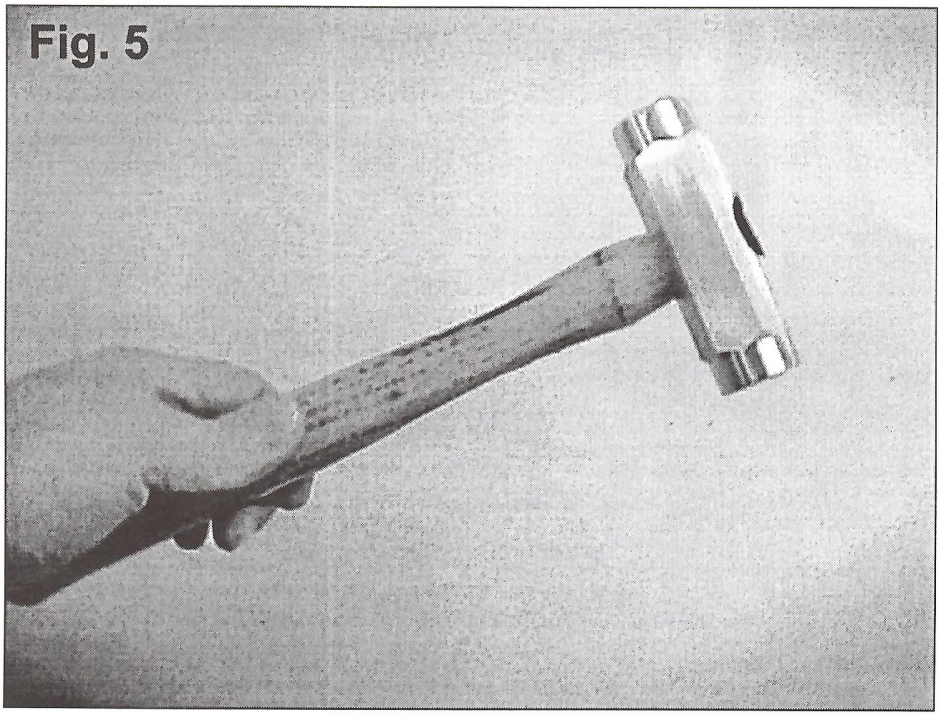
The next item needed is a 3" length of brass bar for the Head. I use hexagon stock for a number of reasons, both practical and decorative, but round bar will do perfectly well if that is what you have at hand. My first hammer head was made from 11/16" hex only because I had a length of that size bar handy, but material of any nominal size between 5/8" and 3/4" round or hex can be used with equally successful results. By the way, for future reference, the size of hexagon bar stock is measured across the flats.



We will begin by fitting the handle to the head. To do this we first cross-drill and file a hole that very closely matches the oval profile and taper of the handle stem. While at first this might appear to be a difficult job for such a simple tool, it is in fact not nearly as bad as it seems once we plow into it. Since the stems of our handles are likely to be somewhat different in shape, the first step will be to measure your handle stem and determine the width ('W') of the oval hole needed. Make an eyeball approximation of the small circle diameters ('D') at the ends of the oval (see the drawing, Section A) and by subtracting from the overal width ('W') compute their center to center distance ('X') which will form the geometric basis for our oval hole. Therefore [W - D = X]. I should point out that the object is to achieve a very tight head to handle fit so care should be taken to fudge a bit on the center to center distance ('X') so in no case should the hole be larger than the stem. The stem can be shaved later. Again, muddle through this part of the work and the rest is a piece of cake.

Mark off the center point of your bar stock and center pop this point. If hex stock is used with the points up as I did you will need to file a narrow flat on the point for laying out and drilling. With your dividers strike off the two hole locations equal distance from the center point (X/2) and center pop for the holes. Clamp the bar securely to the drill press table and center drill on the two outside pop marks. Follow this at each location by drilling through with the required diameter drill. (Photo 1) Because the material is brass, and we know how hand-holding brass for drilling can sometimes present problems, it will be important to keep the bar securely clamped to the table during the entire drilling process to prevent grabbing and possible damage to man and machine alike.

Next, either by sawing or chain drilling with smaller drills, remove the remaining web (area 'Z' - Drawing Fig. 1) between the two drilled holes. Using a round file (or hand held grinder if you have one) proceed to finish out the interior of the oval. (Photo 2) Measure the size of the oval of the stem near the handle and relieve (remove material) the hole so that you begin to approximate the taper and shape of the stem and leave a slight "bell-mouth" at the stem entry side. This is done to reduce the abruptness of the entry of the stem into the head and to reduce the amount of material required to be removed from the stem thus making a smoother and stronger transition. When you have achieved a smooth and nicely tapered oval inside the hole, the handle stem can then be sanded or shaved to remove the last bits of material and bring the two to a near perfect fit. The object is to get this fit smooth and tight, and to fill the oval hole solid



with wood, yet leave as much material as is reasonably possible in the stem. A little extra time spent now on getting this fit right will be repaid many times with long, trouble free service. To complete this part file away any burrs or wire edges left from the drilling and relieving process and we are done.

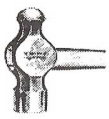
Now to the lathe and the easy parts. Chuck the bar in your lathe and in turn face off each end so as to bring the finished head to approximately 3" overall length (OAL), taking care of course to keep the stem hole equal distance from the finished ends. I found 3" OAL to be just right for this size hammer, though you may make it whatever you like, within reason of course. If you have used hex stock, although not required, a nice touch is to turn down the hex to round for 3/8" to 1/2" from the hammer face, as shown in the drawings and in Photo 2.

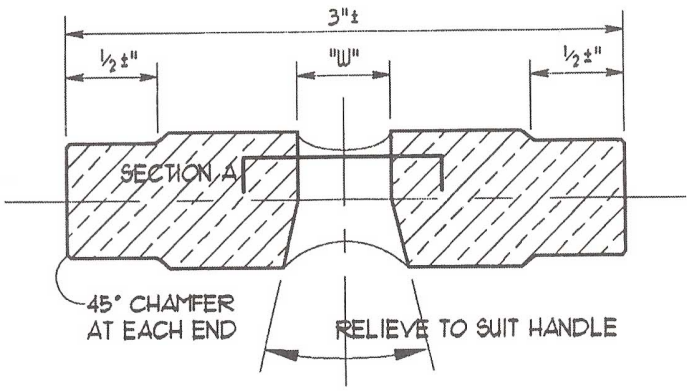
With the head still in the lathe, file or turn a narrow chamfer (.025"-.050") on the edges of both end faces. The head is now essentially done.

To proceed with final assembly, insert the handle into the head (or press it depending upon the fit you achieved) and force it on until it will go no further. At this stage the hammer should appear as in Photo 4, with the excess stem protruding from the top, and a few curls of wood on the bottom side where they were shaved off as the very close fitting head was pressed on. Remove the protruding excess stem material to nearly flush with the top side of the bar.

With a smooth-faced hammer drive the steel expansion wedge (furnished with the handle) into the stem as far as it will go, but by increments checking to see that things are proceeding correctly. Stop if you see that the sides of the head have begun to bulge a bit from the expansion of the stem. At this point you may file or grind the remaining stem and wedge flush with the surface of the head, and there you have it. You have made your first tool (Photo 5), the first of many, I hope, and one that will last for many years.

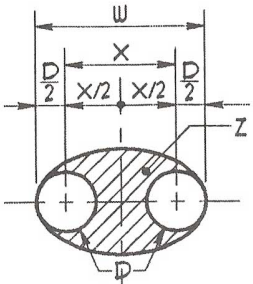
I know there are some of you out there that are grumbling to yourselves right about now about what a stupid waste of printing space, this hammer thing. But of course this isn't about a hammer at all, is it? It's about learning how tools and materials work together, how to select material, how to mark out, how to get a drill bit to go through just where you want it, how to file brass, when and where to turn a chamfer, how to shave just a bit to get a fit, and how to make something from nothing using your hands. All things you will encounter again and again building locos. To carry on in that vein, in our next episode we will have a look at metal saws and sawing, but don't worry, we won't be making a saw. In fact, it really won't be about saws at all. I plan to describe how to hack a locomotive frame from an otherwise lifeless piece of sheet metal and a saw or two might make things go easier.



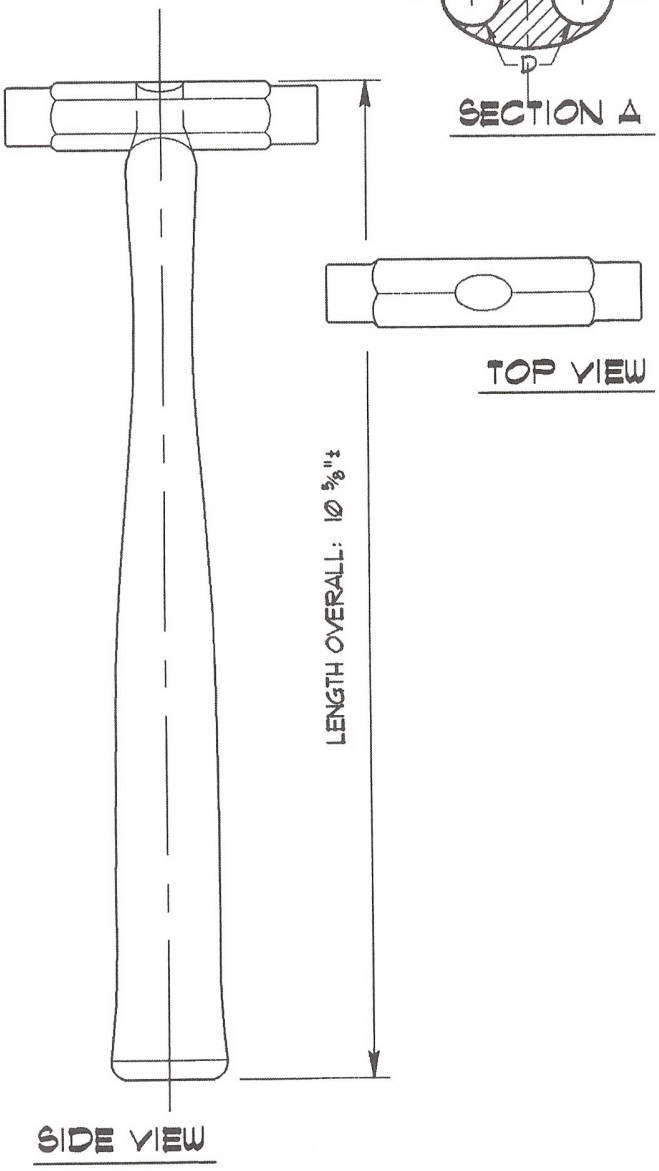


SECTION at HEAD

MAT'L: 5/8" TO 7/8" BRASS BAR
HEX BAR VERSION SHOWN

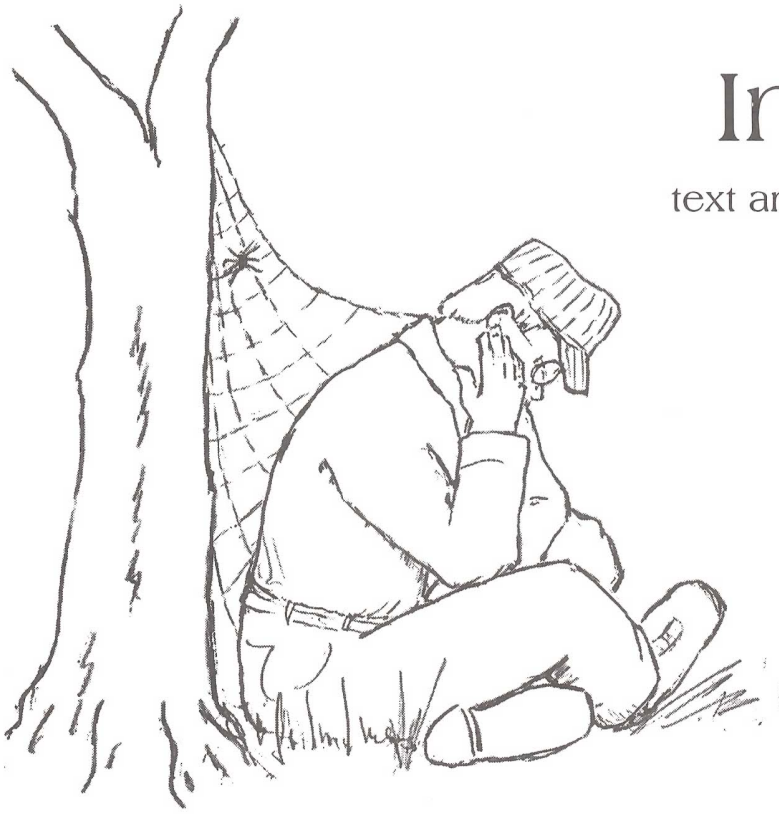


SECTION A



TOP VIEW

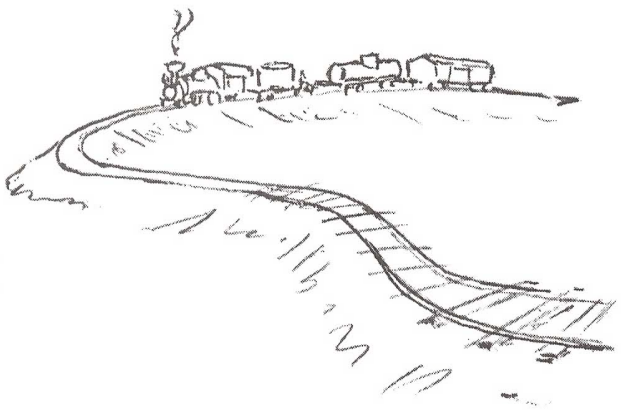
SIDE VIEW



Inside Track

text and illustrations by Larry Bangham

The Best Whistle Valve Yet... (and the best whistle, too)



Features:

Good modulation-Quillable; Leak free-Weep free; Built in return spring; Cheap-Valve cores readily available at automotive stores less than 50 cents each; Materials suitable for steam application-brass, stainless steel high temperature elastomer.

In the course of my continuing quest for the holy whistle grail, I recently discovered the aifributes of the Schrader™ valve for precise steam regulation.

The Schrader tire valve has to be one of the most successful and widely used products of the automotive age. Millions are in constant use and function through the worst possible environmental extremes.... shock, vibration, high acceleration, salt, sand, dust, water, ice, heat, cold, pressure, and corrosion just to name a bunch.

Current versions of this device are considerably shorter than their predecessors and are eminently suited for mounting in a locomotive cab or even in a steam dome to operate a whistle. The unique characteristic of this valve is the ability for pressure modulation. Small ball type valves and O-ring valves tend to pop on in an unrealistic manner. Modulation, excellent pressure sealing, and the built in return spring make this an ideal valve for whistle operation.

Figure 1 illustrates three different methods of adapting the valve core to an operating lever, depending upon the availability of different machine and hand tools.

Example one

This assembly utilizes a standard tire valve and a push type actuator made from a 3/4 extension cap. This works fine for hand operated whistles. It is the simplest and cheapest of the three, requiring only a drill press and hand tools.

The best source for a valve stem is an old bicycle or automobile tire tube. They are also available from automotive stores and tire dealers. Purchase new valve cores if you use old valve stems. The valve core should be removed before doing any modifications.

I have modified three different lengths of 'Snap in valve stems' for tubeless tires from Pep Boys™, and several of the tube types. They have all had 6mm (.236) dia. "tails" under the rubber seals. The rubber can be removed using a sharp blade to get the bulk off and then burning it with a propane torch (outdoors). After burning wipe it off (lots of carbon black) and then clean it with a power wire brush.

Soldering is the easiest way to attach the supply tube to the valve stem. Drill the tail end ID out to 5/32" dia by about 1/4" deep and solder in K&S tubing to adapt it down to 1/8" or 3/32" minimum. Soft solder can be used for all solder operations. If it is desired to have the supply line removable, the valve stem can be threaded.

I haven't seen any 6mm threaded union nuts, although they probably exist, so I tried threading the stem 1/4-40. It makes an under size thread but works fine, just don't over torque it. The concentricity of the inner to outer dia. is not the greatest, so a little Teflon pipe dope on the taper will help to seal it. The 1/4-40 union nuts and ferrules (cones) are available from Sulphur Springs and other model engineer supply dealers.

For the ferrule taper in the back of the stem, use a #3 or #4, 60 degree center drill. Line it up in a drill press and enlarge the taper until it almost reaches the outer surface (about 7/32"). Go slow and avoid chatter. I use cutting fluid for this operation. I suppose it could be done with a hand drill but would certainly be tricky.

The valve extension cap part #1 used was 38-314-4 made by

Camel, available at Pep Boys. Most automotive and tire stores should carry one kind or another. The one I used was chrome plated with a brass body and steel plunger button. Again it can probably be modified with a hand drill, but a drill press is recommended.

In order to drill the hole in the plunger button, a plug must be inserted between the valve stem and the plunger bottom end to keep the plunger from depressing and rotating. A 6mm or 1/4" dia. ball from a bearing works fine, or it could be made from a piece of dowel. Place the plug between the two parts and torque down.

I used a #1 center drill to get a dimple started in the plunger button. The 1/16" dia. hole does not need to be any deeper than 1/8". A 1/16" dia. brass rod of the desired length is then soldered into the plunger button.

The cap requires sealing on the inside to make it steam tight. I cut a gasket out of silicone rubber sheet 1/4" dia. which slips in up against the end of the valve core.

Drill the steam outlet hole with the extension cap fully screwed in place on the valve stem. Calculate the .100 location from some feature on the stem and finish drill through both walls with a .089 dia. drill. This will provide a nice snug fit for the 3/32" dia. outlet tube which should not penetrate through the cap internal major thread dia. If it does, it can be cleaned up using a 5/16-32 UNEF tap. The valve stem thread can be cleaned up with a 12A36 UNS tap. A 3/32" tube ferrule is used as a hose nipple. The 1/8" diameter hose used on all the valve assemblies can be either silicone or neoprene rubber.

A thing of beauty - a work of art!

Example two

This valve assembly is made from an air extension hose valve stem. These are sold at automotive and recreational vehicle stores. They are used to make the air valve on dual rear wheels more accessible. Hoses are sold in pairs and include a female coupling which I find useful for other projects. This is probably the most expensive of the three options shown, but let's you get off to a fast start with most of the threading already done. These valve stems have a longer threaded nose and a heavier, more concentric tail allowing a full thread and better sealing.

If a piece of 7/16" brass rod is available, this assembly can be made with a drill press and hand tools. To keep the assembly as short as possible shorten the threaded nose of the valve stem so that the valve core body is flush with the end when fully seated. If desired, wrench flats can be filed on the adapter body. The same size cone (ferrule) that is used on the 3/32 supply tube can be soldered into the adapter body for the outlet hose nipple. It should be orientated to match the installation requirements.

The side sections shown with the examples can be scaled to get the proportions and details. A washer is soldered to the valve stem to provide a stop for the adapter. The cam on the actuating lever is a circular section and should be located to provide 1/16" to 3/32" travel of the pin. Leave just enough slop to allow the valve to fully close.

Example three

This example shows one option that is available using a lathe and perhaps a mill. The valve body is made from 5/32" brass hex stock and is threaded to accept the core. The actuator is set up for radio control and hand operation. Using 26 AWG stranded Teflon wire from the servo, running through 3/32" copper tubing with generous radii, the servo can be mounted out of sight close to the floor of the cab. This is the valve I am presently running on my C&S Mogul. Again, the side section can be scaled for proportion and details.

Conclusion

There are many ways to actuate a valve. The examples shown are some that I have made during the course of my investigation.

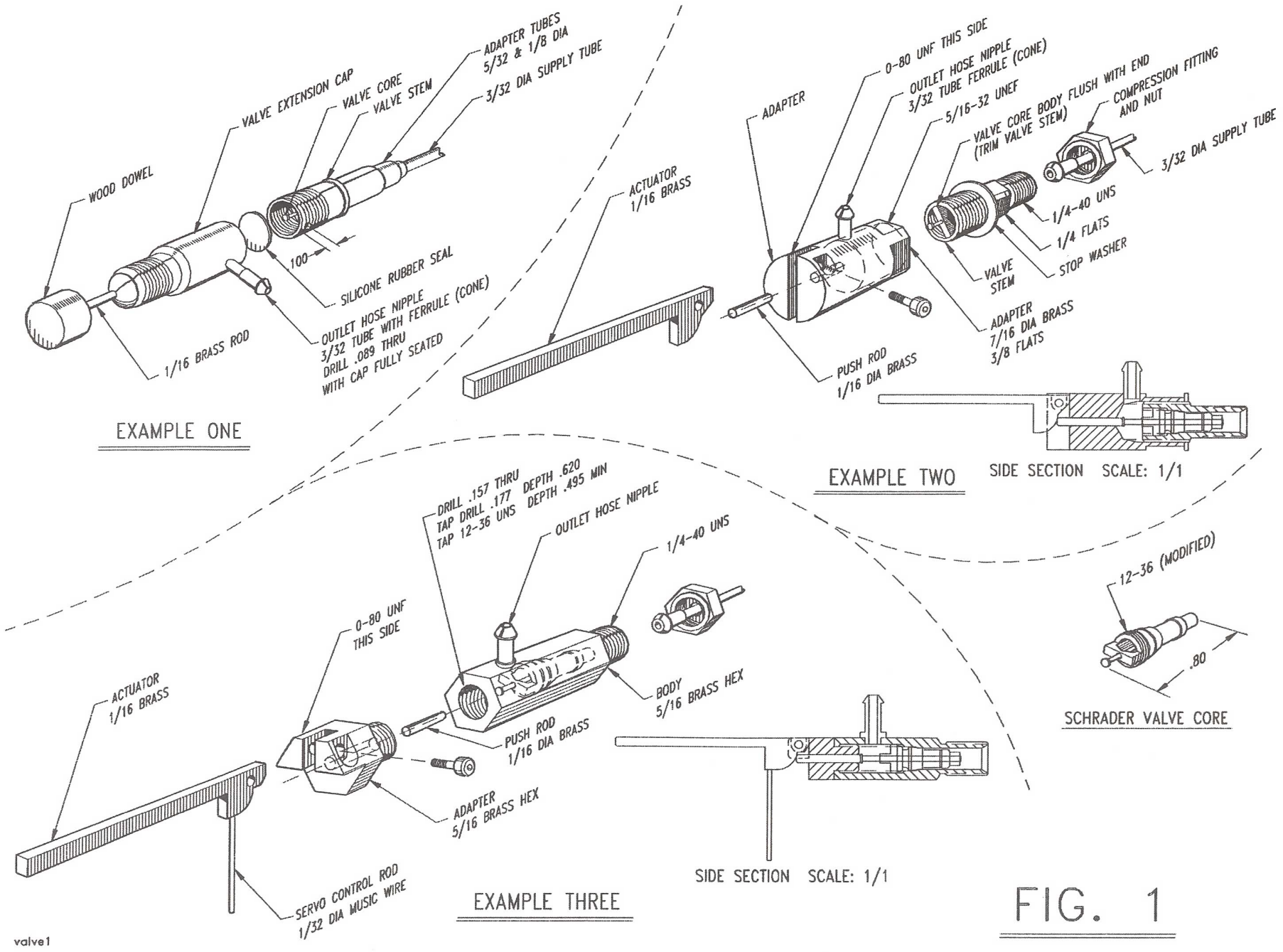
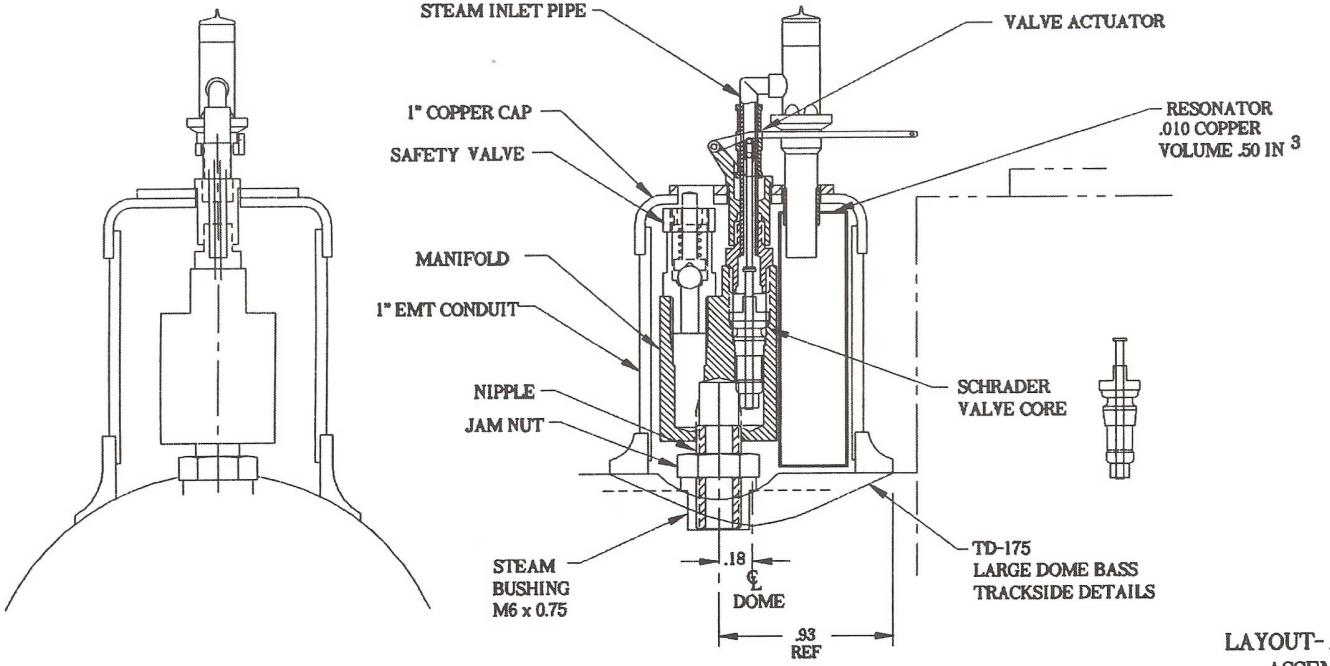
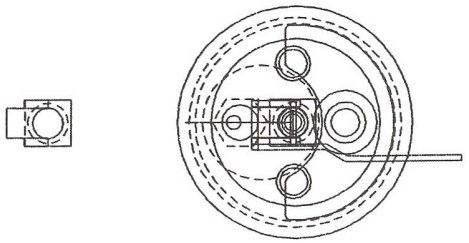
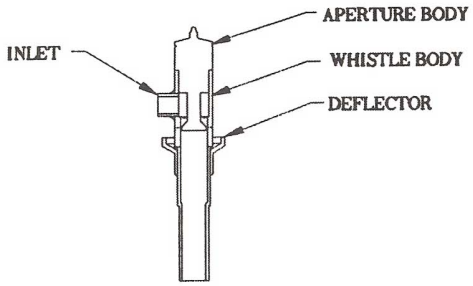

WOOD DOWEL
VALVE EXTENSION CAP
VALVE CORE
VALVE STEM
ADAPTER TUBES
5/32 & 1/8 DIA
3/32 DIA SUPPLY TUBE
100
SILICONE RUBBER SEAL
OUTLET HOSE NIPPLE
3/32 TUBE WITH FERRULE (CONE)
DRILL .089 THRU
WITH CAP FULLY SEATED
1/16 BRASS ROD
ACTUATOR
1/16 BRASS
EXAMPLE ONE
ADAPTER
0-80 UNF THIS SIDE
OUTLET HOSE NIPPLE
3/32 TUBE FERRULE (CONE)
5/16-32 UNEF
VALVE CORE BODY FLUSH WITH END
(TRIM VALVE STEM)
COMPRESSION FITTING
AND NUT
3/32 DIA SUPPLY TUBE
1/4-40 UNS
1/4 FLATS
STOP WASHER
VALVE
STEM
ADAPTER
7/16 DIA BRASS
3/8 FLATS
PUSH ROD
1/16 DIA BRASS
EXAMPLE TWO
SIDE SECTION SCALE: 1/1
12-36 (MODIFIED)
.80
SCHRADER VALVE CORE
DRILL .157 THRU
TAP DRILL .177 DEPTH .620
TAP 12-36 UNS DEPTH .495 MIN
OUTLET HOSE NIPPLE
1/4-40 UNS
0-80 UNF
THIS SIDE
ACTUATOR
1/16 BRASS
BODY
5/16 BRASS HEX
PUSH ROD
1/16 DIA BRASS
ADAPTER
5/16 BRASS HEX
SERVO CONTROL ROD
1/32 DIA MUSIC WIRE
EXAMPLE THREE
SIDE SECTION SCALE: 1/1

FIG. 1

valve1







WHISTLE ASSY

LAYOUT- ADVANCED WHISTLE & VALVE ASSEMBLY, ASTER C&S MOGUL

SCALE : 1/1 L. BANGHAM 7-4-99

FIG. 2

Another method that I tried, which turned out to be rather laborious but worked well when it was finished, was on an experimental 3/4" scale steam dome for a K-27 with a side mounted whistle. The actuator rotates at a right angle to the valve stem and incorporates a helical ramp that depresses the plunger when rotated (see photo).

Another valve that I am currently building has an in-the-line plunger operated by a sliding external sleeve which eliminates the separate outlet plumbing. This feature allowed a completely self contained assembly containing a steam manifold, safety valve, whistle valve, and resonator to be mounted inside a steam dome with the whistle coming through the top (see Figure 2).

For whistle lovers the good news is that this dome size will fit on many of the different narrow gauge engines that have a safety valve in the steam dome. The bad news is that I am currently building a batch of only four of these assemblies and they are all spoken for. However, the experience of building these assemblies will give me a data base on the costs and problems involved. With this information I will be in a better position to determine whether I want to expand this operation into something approaching a commercial venture. I will be talking to casting people and machine shops and who knows, maybe there is a silver lining out there for you whistle lovers.

Here's to more and better whistles.....

Why Do I Model in 7/8" Scale?

by Kevin Schindler - *Compania Minas Cielo Azul*

For years, I've collected narrow gauge railway books and modeled various narrow gauge railroads, and found myself always gravitating towards the smallest and funniest of equipment. Yes, the small stuff can be modeled in the smaller scales, but something is missing. In 7/8" scale that rich character and charm can be appropriately captured. The "mini might" of a 4 ton lokie is there in all its glory.

Secondly, the simplicity and quaintness of a light railway can easily be rendered in a small back yard. Tight radius curves don't have to be excused away. Many Hunslet 2' and 18" gauge locomotives were quite capable of negotiating a 23' radius. Face it, most of us don't have the room for the 10' to 12' + radius curves required to make a larger locomotive look "right" in our small settings.

In 7/8" scale, a true and complete miniature industrial railway can be designed and built. Not some made up slice of a specific prototype on which, after some time (and in most cases), modeling boredom sets in. It is a real railway; it just happens to run on tracks that are two or three fingers wide.

Having a sense of place, purpose, and history your railway stands on its own. Simple way-side structures are enough to infer a larger world just off the right of way. Imagination is inspired and allowed to grow. I very much like the 7/8" scale "less is more" mantra and use this minimal approach to my entire railway. I equate my railway expression to a form of Haiku, the Japanese form of poetry using the smallest amount of words to express a feeling. Therein lies the true challenge!

Finally, 7/8" scale offers freedom to the modeler. It's your railway, damn it, do what you like! The world is your oyster. Glean ideas from equipment, construction, and operational practices from anywhere in the world you see fit and apply them to your railway. In some cases, the amount of bolts, nuts and rivets are exactly what it took to build that specific piece of equipment in full size. Real hardware! Rivet counters and nit pickers need not apply. Have fun and enjoy your pastime. I'm sincerely having the time of my life in 7/8" scale. Try it...you may like it.

Reprinted with permission from the TIMETABLE, *the newsletter of the Greater Humboldt Bay (California) Garden Railway Society.*

Accucraft's Ruby

text and photos (unless otherwise noted) by Clark Lord

A steamer for the masses?

Technical Specifications

Description:	0-4-0T - Freelance tank engine based on Baldwin practice
Scale / Gauge:	1.20.3, 45mm
Dimensions:	Length: 9.7/8" • Width: 3.7/8" • Height: 5.1/2"
Driver diameter:	1.3/8", mounted onuninsulated axles
Weight:	4 pounds 10 ounces
Boiler:	Single flue • butane gas fired • silver soldered copper • tested to 100 psi
Boiler capacity:	120 ml when full • 84 ml at 75%
Working pressure:	40 psi
Boiler fittings:	Safety valve • throttle • plug for add-on pressure gauge • water filler plug
Lubricator:	Displacement type located in the left side of the cab
Cylinders:	2 cylinders with piston valves • exhaust is through the stack
Valve Gear:	Fixed eccentrics on rear axle via rocker arms to piston valves
Reversing Gear:	Piston type reversing valve between cylinders • controlled from the cab
Minimum Radius:	24"
Options:	Catalog #77-010 Ruby 0-4-0 Tank Engine (Black and as pictured) Catalog #77-012 Ruby 0-4-0 Tank Engine Deluxe • Pre-installed Boiler Pressure Gauge • Russian Iron Boiler • Red Cab, Side Tank, and Wheel Centers
Built by:	Accucraft Trains, 1785 Timothy Drive #3, San Leandro, CA 94577
Available from:	A listing of dealers by state/country can be found at http://www.accucraft.com or email accucraft@worldnet.att.net

Accucraft Trains has a winner with this attractively priced engine. No longer can folks complain that small-scale live steam engines cost too much. The suggested retail price of USD$399.00, which is discounted by many dealers, is an affordable entry into this great hobby of live steam.

While not a model of any specific prototype, Ruby is a simple locomotive based on Baldwin Locomotive Works building practice. It is typical of small locomotives used on industrial and short line railroads all over the world. This is an excellent engine for beginners in live steam because it is simple to operate and reliable in use. On the other hand, it is sophisticated enough to interest those live steamers with more experience.

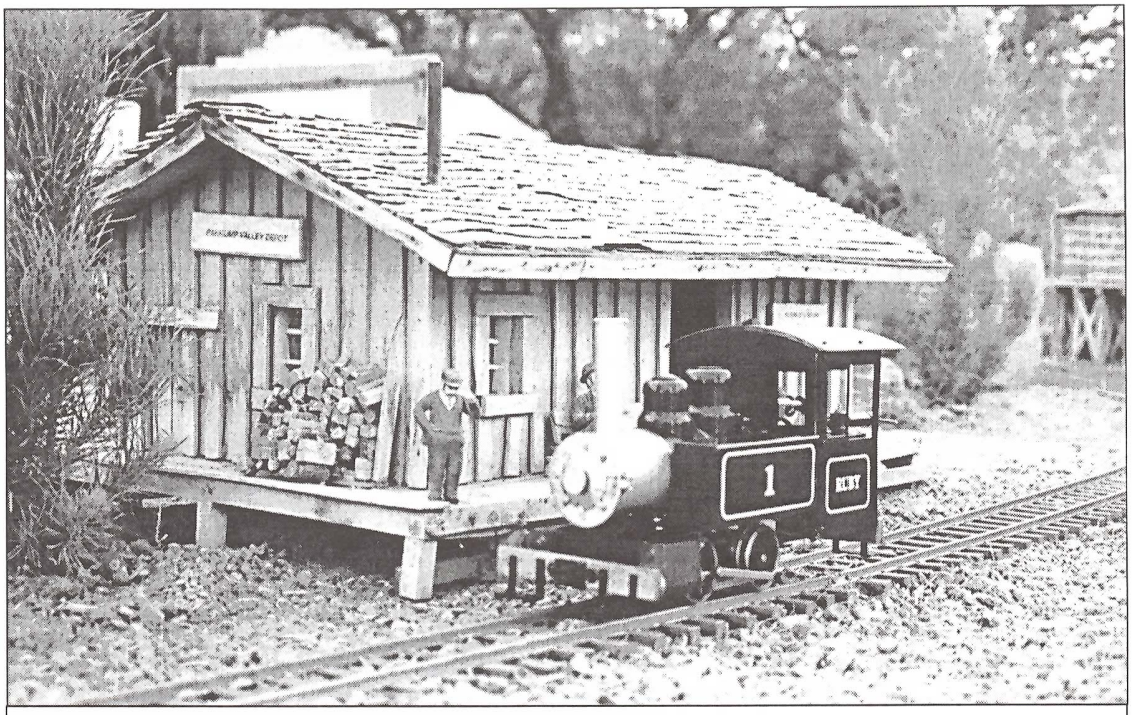
Ruby will easily lend itself to kitbashing and cosmetic modification.

The sheet-metal work (cab & side tanks) is designed to be easily removed, leaving a complete running chassis and boiler ready for a new superstructure. With a little imagination and ingenuity, the tanks can be eliminated and a tender added. Leading or trailing wheels can be added and other changes can be made which results in your own unique locomotive.

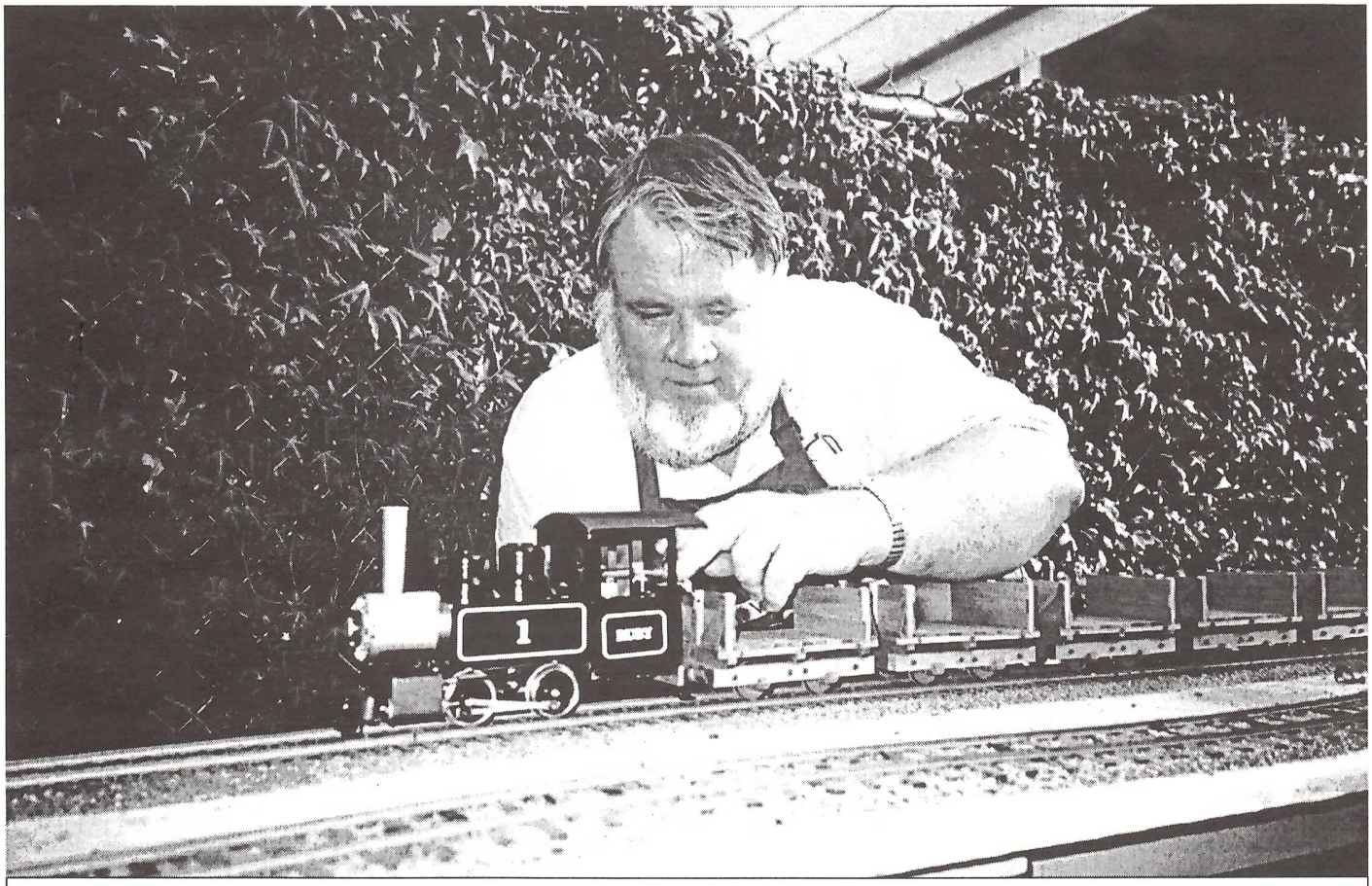
FIRST IMPRESSIONS

I ordered two Ruby engines and both arrived via UPS® in excellent condition. The engine is double packed. Inside the outer foam peanut-filled box is the engine box. Inside that box is a

foam carrier which contains the engine. After lifting the engine out of the foam carrier using the two red ribbons provided, I could find no damage. Contents: engine, a steam dome, a sand dome, 2 syringes (large and small), a plastic bag with nut & bolt spares and the instruction sheet. The instruction sheet is clear and well written. A beginner could fire this engine without difficulty by following the instructions, but those new to the hobby might have diffi-



A new loco has just arrived at the Pahrump Valley Depot, and, like all newcomers, it is subjected to close scrutiny by the old timers in residence.



Clark Lord operating his RUBY on Kevin O'Connor's Sacramento South Side Railroad. RUBY is pulling a rake of Trail Creek Models side dump cars. ***Photo: Richard Finlayson***

culty finding steam oil.

A closer inspection of the engine revealed that the engine had been run, as evidenced by steam oil in the lubricator and water droplets in the boiler. This was true of both engines and I have now learned that all RUBY engines are tested before shipping.

RUBY delivering ore cars to the Elkhorn Silver Mill on Lou Banning's Pahrump Valley and Amargosa R.R. in Nevada.

DESCRIPTION

This engine has nice overall proportions. The wooden front and rear buffers have a pocket for link and pin coupling. I easily inserted a Kadee™ coupler that had been modified to fit the pocket. The pockets are 1/4" too low when compared to the Kadee™ height gauge. Using an offset shank coupler solved that problem. If you are going to run a hook and loop coupler, the height is just right for the loop to slide in.

The cab pulls off for servicing, allowing easy access to the rear of the engine. I noted that the cab alignment tabs on the bottom rear were a bit tight. I sprung them out for a looser fit on the frame. The lubricator sits in front of the gas tank and has a knurled cover for easy removal. Both the lubricator and butane gas tank are located on the left side. The reversing lever occupies the right side. The throttle valve comes with a brass servo arm attached by a set screw, and the gas valve has a short rod extending 90° from the end for turning on and off. The gas jet and burner assemblies are a press fit into the single flue allowing for easy removal should cleaning be required. A blue silicon tube conducts the gas from the tank to the jet.

Heavy brass domes cover the safety valve and filler plugs. They lift off easily and are quite hot during after a run. Removing the front water filler plug allows filling the boiler. I fill the boiler to overflowing and then draw out 30 ml to make a steam space.

The side tanks also get very hot after a run as there is no insulation on the boiler. You must pick the engine up by the wooden end buffers so that you don't burn your fingers.

The front of the boiler has a smokebox door that can be opened for lighting. I found that the engine could be lit by having a flame near the stack, and it would consistently flash back to the burner. With the door open you can observe the flame and make adjustments as needed.

FIRST RUNS

The first runs were conducted on the Las Vegas Garden Railway Society's (LVGRS) large modular railroad that was setup in the convention center as part of a craft sales show. Runs #1, #2 & #3 were on treadmills. My overall impression was that the engine was stiff on the first run and got progressively smoother with each succeeding run. After the third run on treadmills, I felt that RUBY could make a circuit of the 250' main line. Run #4 took 4.1/2 minutes to raise steam and the total run duration was 9 minutes. Run #5 was on my 350' home track. I raised steam and then topped off the butane in an attempt to get a longer run. It improved to 11 minutes total burner time. This seemed to me to be a short run. Twenty to thirty milliliters of water remained after each run.

While filling the fuel tank with butane for run #5 I noticed a

gas leak where the filler valve screws into the tank. That explained the short runs. I tightened the valve to stop the leak.

The next day runs #6 and #7 were conducted at the LVGRS modular track. I invited Fred Devine, local distributor for G scale products and representative for Accucraft, to run the engine. This was his first experience with a live steam engine. I coached him through pre-run servicing and preparation, which he was able to do without difficulty. His first attempts to light the fire were a no go. After demonstrating the proper method to him, he had no further difficulty.

We ran the engine back and forth on a long siding. I was on one end and Fred on the other. It ran equally well in both directions. We again had a 9-minute run. I examined the filler valve for leaks; sadly it was leaking again.

THE FIX

I have now had my hands on 5 different RUBY locomotives. Three of these had gas leaks and two did not. We tried changing the O-ring, removing the paint on the top of the tank, smoothing the top thread on the top of the tank, wrapping a skinny slice of Teflon™ tape around the threads and lastly applying a very small drop of Loctite™ to the thread. The best fix so far is just the Loctite™ applied to the thread. That said, the Teflon™ tape also worked just fine.

Lou Banning's RUBY pulling three cars on his 20 X 30 foot indoor layout. This was only the third run for this loco. Impressive!

Another modeler fixed the leak on his RUBY by tightening and loosening the valve while the tank was full and finding that "just right" amount of tightness.

A FIRST TIME STEAMER

I wanted to find out how MISS RUBY would fare in the hands of a dedicated electric and battery train modeler. I gave my second RUBY to my friend Lou Banning. Lou has modeled in HO for years and has now made the transition to "G" scale. His layout, The Pahrump Valley & Amargosa was featured in the October, 1999 issue of *Garden Railways* magazine. In addition to the large outdoor layout, Lou has removed the HO layout and is building a 20' X 30' large scale indoor layout in its place.

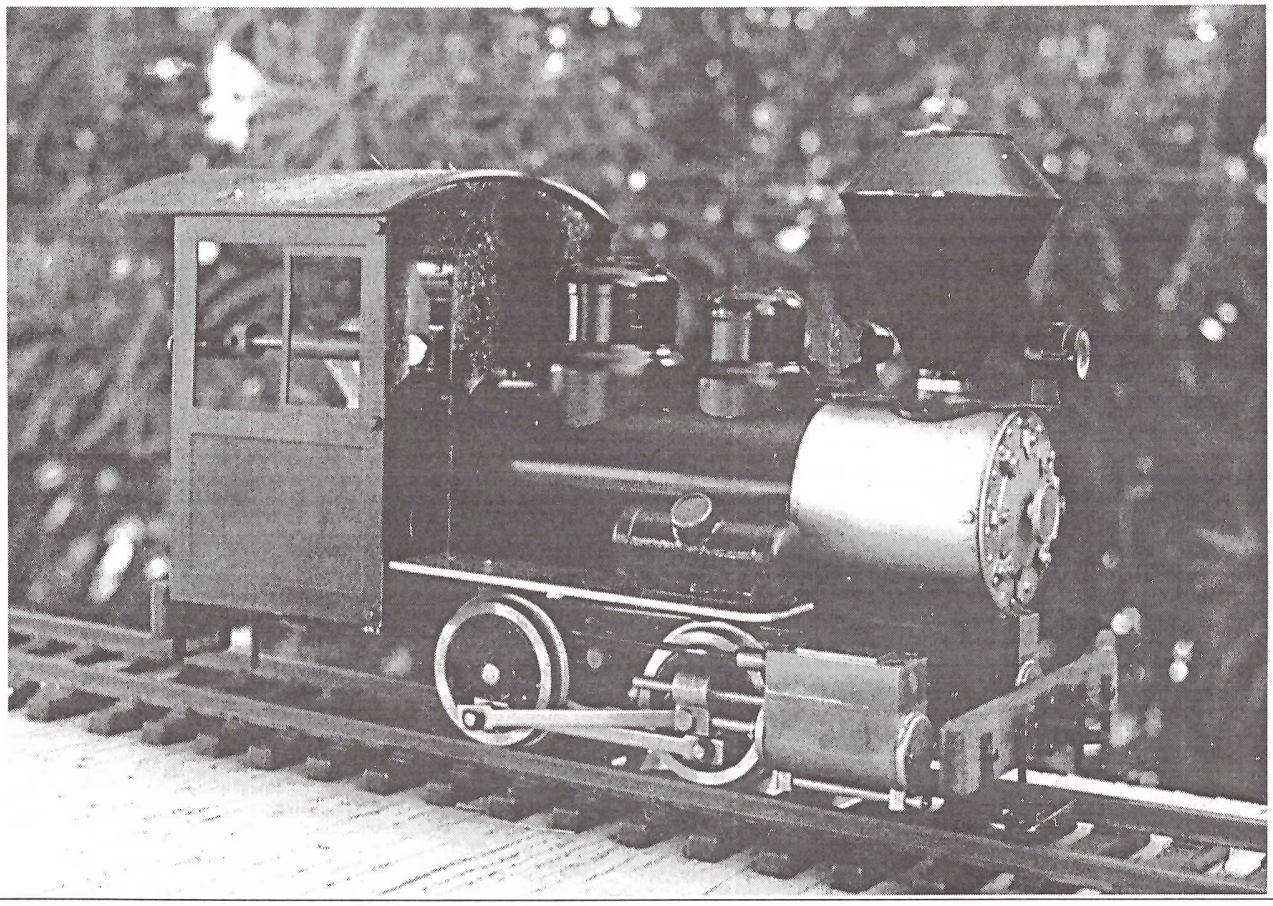
He was very surprised when I handed him the still sealed box. As he opened it and discovered the engine inside, a smile appeared on his face. In no time he had it unpacked and on the track. I handed him my steamup tray of oils, lubricants, water and gas bottles and said, "Fire her up!"

Lou had seen me operate steam engines but this was his first solo attempt at operating an engine. The servicing was straightforward and lighting through the stack gave that satisfying pop.

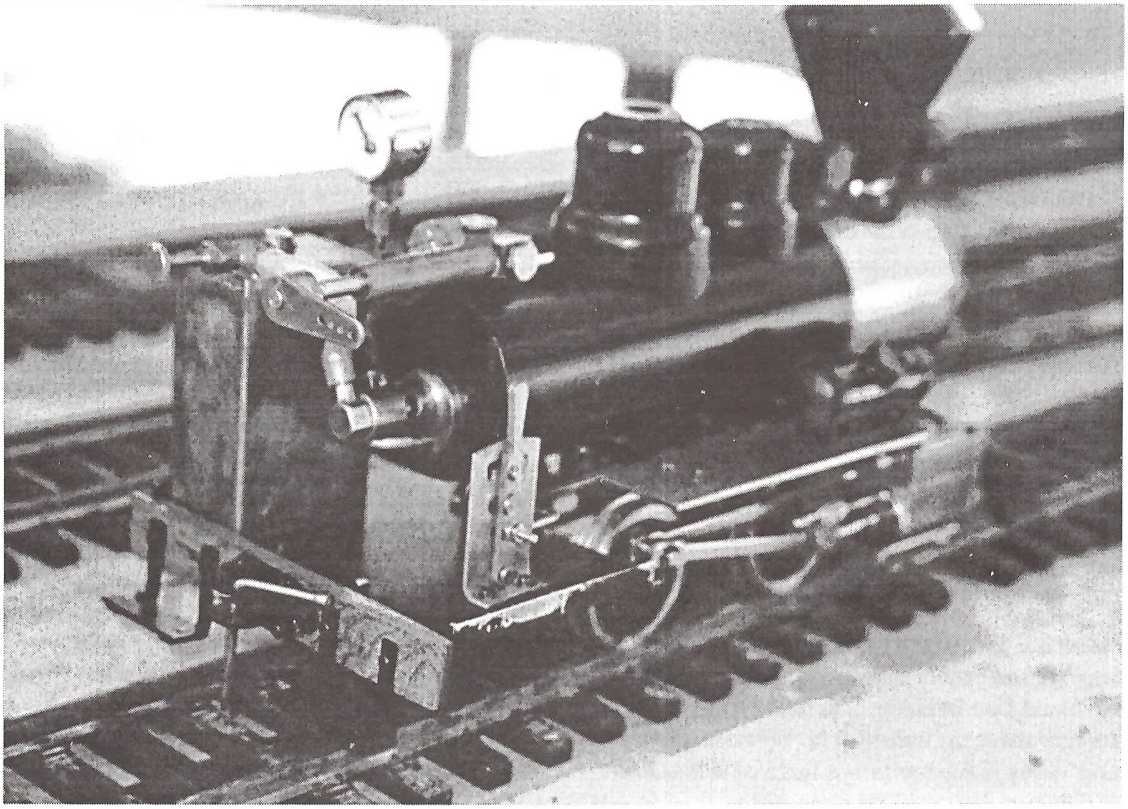
Steam was up in 5 minutes. He began the forward/reverse movement to clear the cylinders, and after some priming away she went on the indoor track. We both smiled as she went around the main line. That first run was over 10 minutes. The second run resulted in a 15 minute run and the third run with 3 metal-wheeled cars was 20 minutes. Boy, was I impressed. This was entirely different than my experience with the first engine.

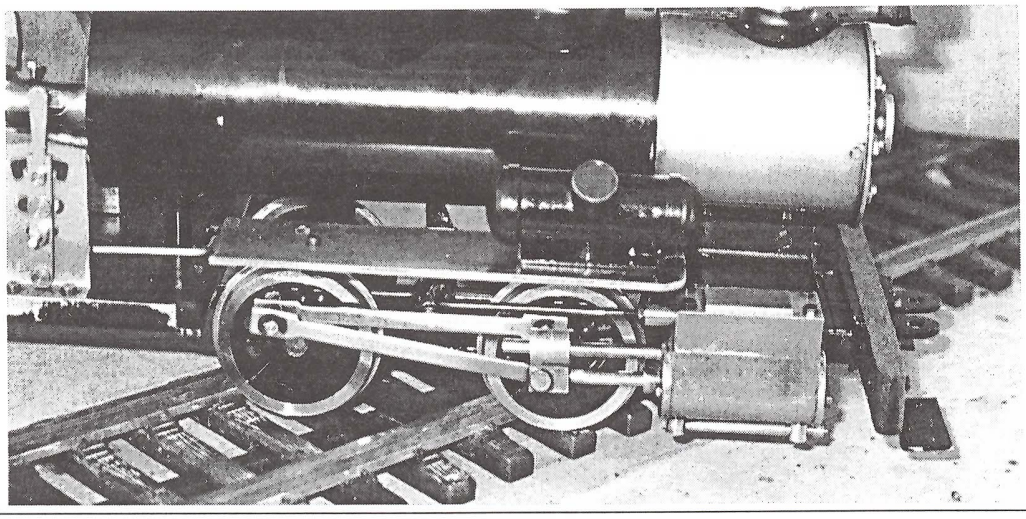
Lou's grandsons arrived and they were fascinated. The next thing I knew he had the 11-year-old filling and operating the engine. We used up my can of Gaz™ brand butane/propane mix and had to get another. Run after run was right at twenty minutes. By the end of the day MISS RUBY would self-start without any priming. We would fire the engine, put her in forward, open the throttle to the correct place and wait. In about 5 minutes away she would go. No back and forth cylinder movements were needed. We pulled as many as 5 cars, but 3 seemed to be about right.

All of this was indoors on a level track with four-foot radius curves. I have talked with other modelers who have run MISS RUBY on tracks with grades, and she works to haul 2 cars on the grade. But of course that varies according to each track.

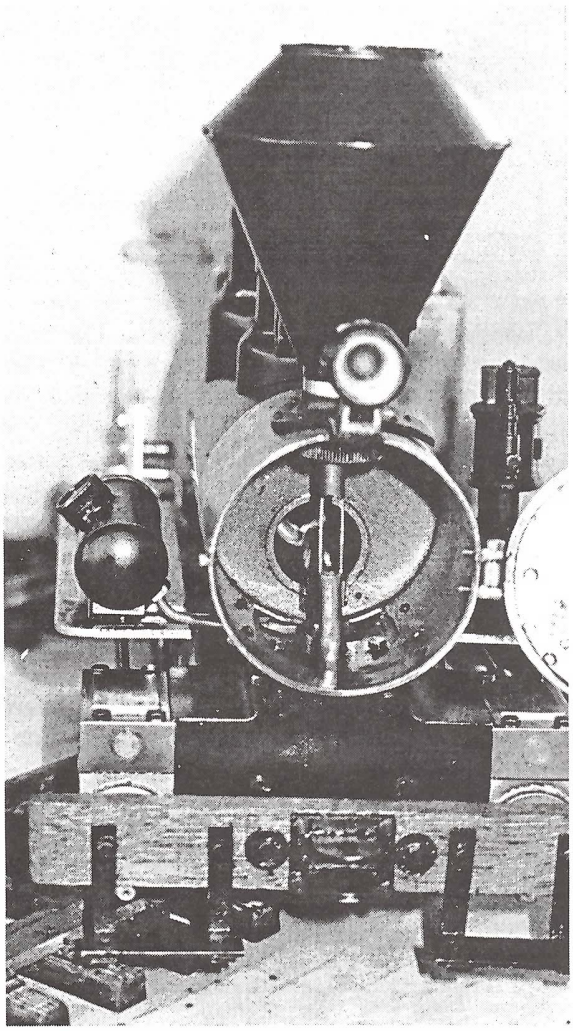


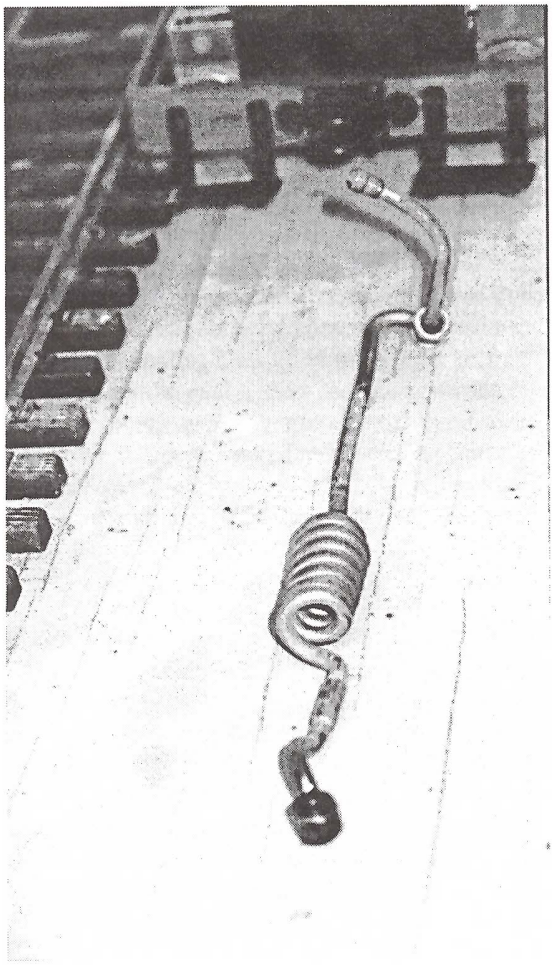
Kevin O'Connor's modified RUBY. This engine has boiled over 6 gallons of water and no wear has been noted. The factory lubricator has been replaced by a Frank S. unit on the running board.





Additional views of Kevin O'Connor's modified RUBY. Note the rod guide attached to the cylinder and the working cylinder drain cocks. A Frank S oil tank on the running board has been adapted for use as the lubricator. Items visible are: Brass running boards, a Frank S oil tank, modified valve chest covers, modified exhaust pipe with chuff enhancing slot, a superheater pipe is inside the flue, Frank S headlight, Catatonk Heisler smoke stack, and a Frank S air pump.





KITBASHING

This engine cries out to be modified. Two of the five engines that I have seen were modified. Larry Bangham replaced the side tanks with a running board, added a screen cap to the stack, and detailed the steam dome with scale safety valves and a dummy whistle.

Kevin O'Connor has extensively rebuilt his pre-production RUBY. Included in his rebuild are an enlarged gas tank, a superheater, cylinder drain cocks, main rod guides, removal of the side tanks and adding running boards. He has replaced the displacement lubricator in the cab with a Roscoe dead leg unit located on a running board. By adding a slotted exhaust pipe the chuff sounds are greatly enhanced. Detail changes include adding a headlight, generator and air pump.

Larry Bangham (L) and Bob Starr discussing RUBY modifications at Clark Lord's steamup in October, 1999

This engine has had over 6 gallons of water run through it and shows no sign of wear. Along with the enlarged fuel tank, Kevin has swapped out the factory gas jet for a smaller #3 jet. He won't tell me what changes he has made on the burner, but Kevin gets right at 30 minutes of run time on a single boiler fill. He usually pulls three LGB™ freight wagons.

THE INTERNET

E-mail discussions on the Internet have been buzzing with stories about MISS RUBY. I have read about several instances of RUBY owners having to fix a gas leak at the filler valve. It seems to be hit and miss. Some leak and some don't. That certainly was the case for Lou and me. Even with that distraction, everyone is pleased with this engine. Accucraft has a winner.

Speaking of the Internet, Vance Bass has created a RUBY page on his web site. Vance has diligently created and maintains a marvelous source of small-scale live steam resources located at: http://www.nmia.com/~vrbass

A page of suggestions about things that could be done with the Accucraft RUBY can be found at:

http://www.nmia.com/~vrbass/steam/ruby/rubythings.htm

Here Vance has compiled some possibilities for the RUBY which are taken directly from the Baldwin Locomotive Works practice with their locomotives. He has included a CAD drawing of a new cab for RUBY, suitable for use with a tender. Check this site out.

IN CONCLUSION

Pros: This engine runs right out of the box. It is easily serviced and pulls three or four metal wheeled cars with ease. After a few runs we were getting between 15 and 20 minute runs with the supplied #6 jet. I installed a #3 jet in my RUBY, and now I get consistent 25-minute runs and have to be careful not to run out of water. The #3 jet requires a different jet holder as the threads are different. The jet is available from Sulphur Springs Steam Models (see their ad in this issue). You have to make, or have a friend make, your own jet holder.

Cons: The leaking gas filler valve is a bother. But it can be easily fixed. It would be nice if a small bottle of steam oil had been included with the engine. Most first time live steamers have no idea what steam oil is, other than that the instructions tell them to use it in the lubricator, and they most likely don't have a clue about sources.

Well, that's it! My in-depth evaluation of this engine tells me that you won't go wrong by buying one. Should you want to contact me, e-mail me at: **clarklord@earthlink.net** or write me c/o this magazine.

Workshop Project

Bulletproof Propane Fuel Tank

text and CAD drawing by Charlie Mynhier

Propane or Butane? The discussion continues.....

In issue № 21, March/April 1994, we published a construction article for a small propane tank suitable to fit into the tender of a #1 gauge locomotive. When I built this tank I designed it for 500 PSI working pressure and 750 PSI test pressure. After building this tank and seeing how robust it was, I decided to test it to 1,000 PSI, which I did and it passed easily. Since that time several of my friends have built this tank and enjoyed the many advantages of propane.

I am happy to see the increased interest in propane for fuel for our locomotives as butane becomes more expensive and increasingly difficult to get. There has been a lot of concern and discussion concerning the safety of our small homemade tanks, and I think now would be a good time to publish the basic formulas we could use in designing safe tanks.

We will use the tank built in issue № 21 as our example. I think it is important to note that a tank is an assembly of several components, and each component needs to be able to withstand the full forces that the pressure in the tank produces. Sort of like a chain in that no chain is stronger than its weakest link.

I drew a full size assembly of this tank along with basic calculations and nomenclature used in its design. I also made a list of the components and the pressures required to take them to their yield. Please note these are not safe pressures, these pressures are where that component starts thinking about the scrap bin. Typical practice is to use one quarter the yield to design for the working pressure, and then hydro test to 1.5 working pressure.

"Yield" is a term we will use a lot in this article, and now is a good time to learn the definition as it applies to metals. Yield is the point where permanent deformation takes place. If you attach one end of a bar of steel and pull on the other end, the bar will stretch, when you quit pulling the bar will go back to its original length. If you pull really hard and surpass the yield strength of the bar, when you quit pulling the bar will be longer than it was when you started. You have "yielded" the bar. If you pull really, really hard and break the bar, you will have exceeded the tensile strength of the metal, but we will not go there in this article. I think it is exciting to learn that we can know these values. Instead of saying "pull really hard", or "pull really, really hard", we can calculate these values and express them in pounds.

End Cap

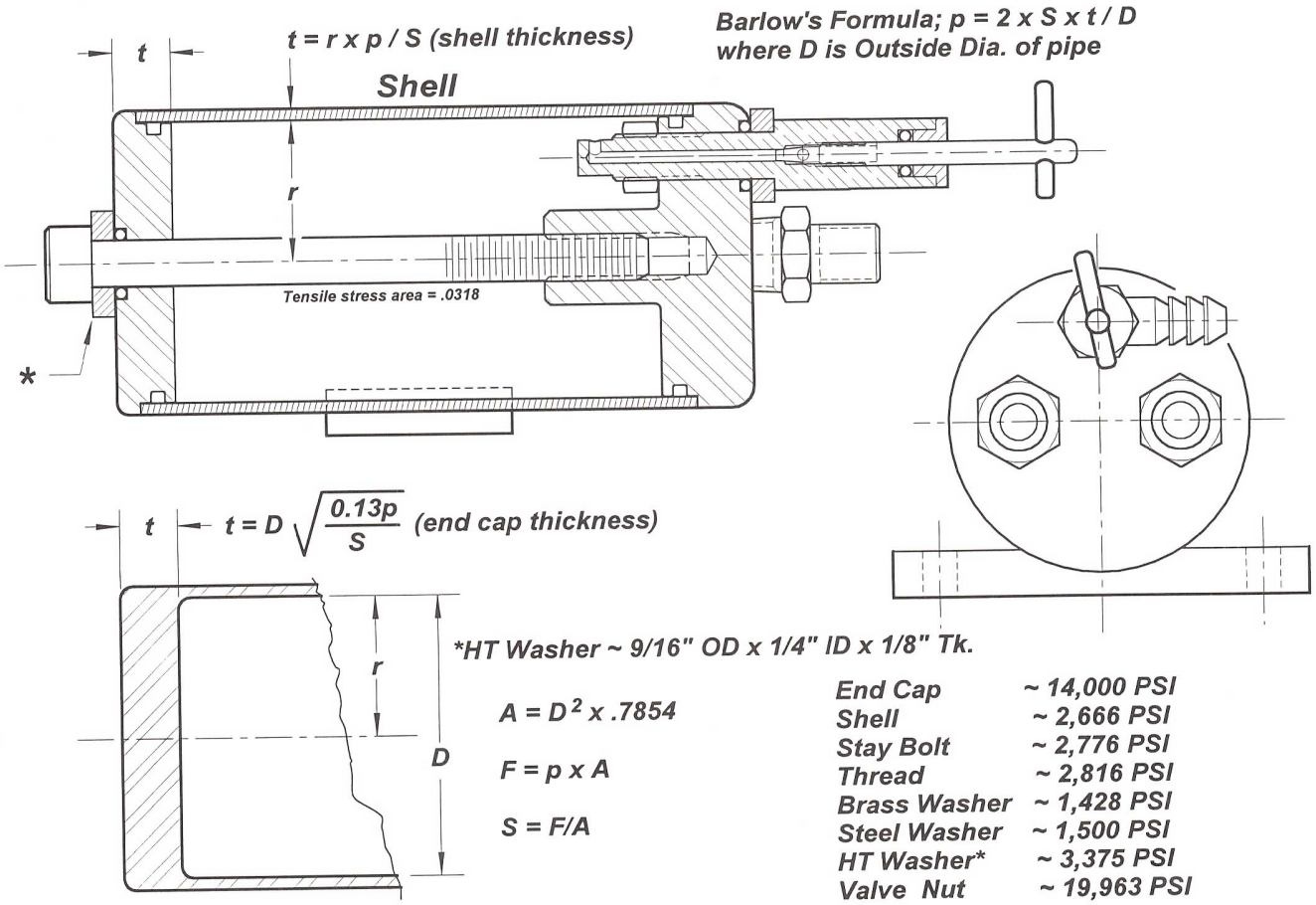
To quote from *Mark's Standard Handbook for Mechanical Engineers,* "The analysis of flat plates subjected to lateral loads is very involved because plates bend in all vertical planes. Strict mathematical derivations have therefore been accomplished only in some special cases." Having said that, I will use a relatively simple formula for a slightly different end cap just to give us a point of reference so we can see how very strong this end cap is. Plug in the numbers, solve the equation and you will see that it takes 14,000 PSI to approach yielding this cap.

Shell

We made our shell from 1.1/2" Type "L" copper pipe. This pipe has an inside diameter of 1.5" with a .062" wall. I could not learn whether this pipe was Light or Hard Drawn, so I used the 32,000 PSI yield for Light Drawn copper. A formula I use shows the wall thickness is equal to the inside radius times the pressure divided by the stress. We know the wall thickness, we know the inside radius, we will use the full 32,000 PSI yield of the pipe and solve for the pressure. Having done this we learn this Shell requires 2,666 PSI to begin to yield. The most common and universally accepted formula is "Barlow's formula". This is a little more conservative and states, $p = 2 \times S \times t/D$. In this formula, D is the outside Dia. Barlow's formula yields the shell at 2,461 PSI.

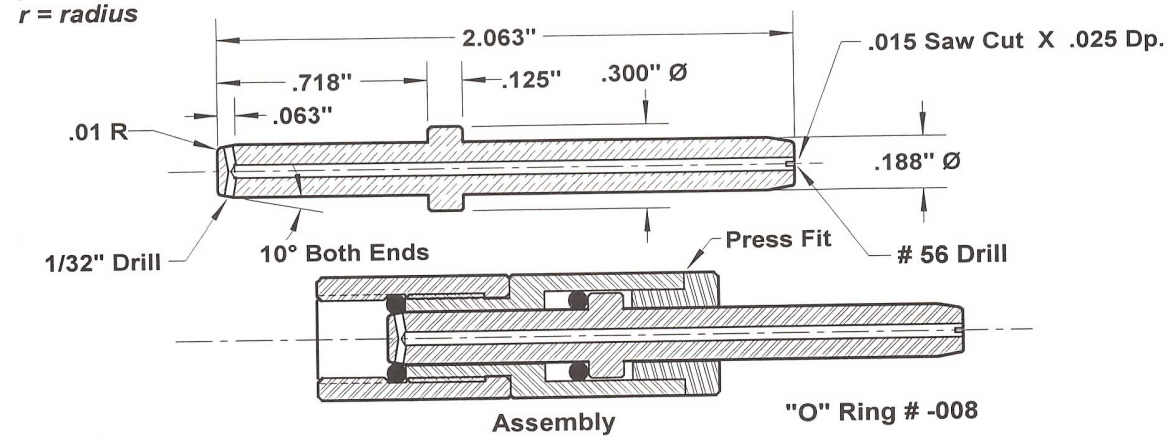
Stay Bolt

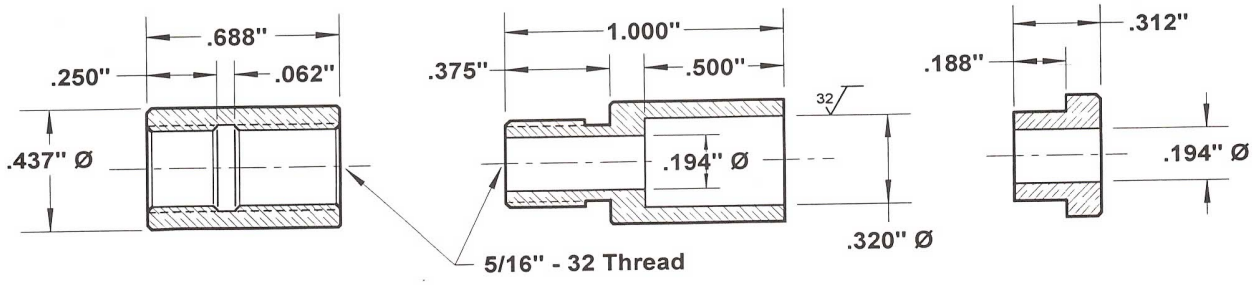
This tank required one 3" long Stay Bolt. I strongly suggested that we use a commercially available, Aircraft Quality socket head cap screw. These screws are manufactured to (ANSI/B 18.3) specifications, and these screws are heat treated to 37-43 Rc hardness. This means they have at least 150,000 PSI yield strength material. This is pounds per square inch, it does not mean the screw will hold 150,000 pounds. Take a 7/8" - 14 UNF screw, which has a tensile stress area of .509 *(Machinerys Handbook),* which means it would take at least 75,000 pounds tension to start failing this screw. The 1/4" - 20 UNC Stay Bolt has a .0315 tensile stress area, so it would



PSI = Pounds per square inch
A = Area
D = Diameter
F = Force
S = Stress
t = Thickness
p = Pressure
r = radius

Strength of materials:
1. Mild steel = 42,000 PSI yield
2. Hard drawn copper (40%) = 50,000 PSI yield
   Light drawn copper (15%) = 32,000 PSI yield
3. Brass = 40,000 PSI yield
4. Soc. hd. screw, (ANSI/B18.3) = 150,000 PSI yield





take 4,770 pounds to bring this screw to its limit, assuming its at the 150,000 PSI minimum. We find this by multiplying .0318 x 150,000 = 4,770. The purpose of this Stay Bolt is to hold the End Cap against the internal pressure of the tank. The End Cap has an area of 1.718, pressure x area equals force, our Stay Bolt can hold 4,770 pounds. 2,776 x 1.718 = 4,770, so our Stay Bolt can hold 2,776 PSI pressure inside the tank.

Thread

The next thing we need to concern ourselves about is the strength of the thread in the Valve End Cap. We are concerned about this because the Valve End Cap material is much softer than the Stay Bolt. We can find this by multiplying the pitch dia. of the thread x 3.1416 (Pi) x one half the length of engagement x shear strength of material (shear = 60% of yield). The Valve End Cap has an extension that allows 9/16" length of thread engagement; one half of this is .281. The formula is (Pitch Dia.~.2175) x Pi x .281 x 25,200 = 4,838, divided by area of End Cap ~ 1.718, tells us we need 2,816 PSI in tank to shear these threads. Strength of internal threads is also affected by the hoop stress generated by the wedging affect of the 60° "V" threads. We will not worry about that this time because the Dia. of the extension allows for sufficient metal behind the thread to prevent hoop stress expansion.

Brass Washer

Since the Stay Bolt head is smaller than the recess that holds the O-ring seal we need a washer to transfer the load from the End Cap to the head of the Stay Bolt. This Washer sees a compressive load both top (head of bolt) and bottom (End Cap). The contact area under the head of the Bolt is smaller than the area at the End Cap so we will concern ourselves with the smaller area only. Area of Bolt head minus area of body x yield of Brass Washer = 2,454, divided by 1.718 = 1,428 PSI tank pressure. If the Washer were made of steel, this tank pressure would be 1,500 PSI.

Just for education, let's consider a heat treated washer made from the same material that the Stay Bolt is made from. Let's make this Washer from the shank of a 9/16" socket hd. cap screw. Purchase a screw long enough that it is not threaded all the way to head, cut off the head and thread, chuck up this piece of 9/16" dia. material in your lathe, drill 1/4" x 1/4" deep minimum. Part off a 1/8" thick washer. Even though the area under the head of the Bolt is much smaller than the area at the End Cap, the Washer is as hard as the head of the Bolt and much harder than the End cap, so this time we will consider the bearing stress at the End Cap using 42,000 PSI yield of End Cap material. We do the math again...area of O.D. minus area of I.D. times yield, divided by area of End Cap = 3,375 PSI in tank.

Valve

The pressure in the tank wants to push the valve out, which is held in by a 1/4" thick Hex Nut. (I noticed the article left you guessing about the nut!) Make this nut from 3/8" Hex bar x 1/4" long. The basic pitch diameter of 1/4" - 40 thread is .233, this x 3.1416 x .125 x 24,000 (shear strength) divided by .110 (area of 3/8" OD O-ring) = 19,963 PSI tank pressure to shear thread! Remember, pressure times area equals force, even though the pressure is very high, the area is small (.110 x 19,963 = 2,196 pounds at which the little brass nut begins to yield.

In summary, the weakest part of this tank is the Brass Washer under the head of the Stay Bolt, and even this will hold 1,428 PSI before showing signs of excess pressure. If you opt to use the heat treated washer described above, the little tank could be cautiously tested to 2,500 PSI and show no signs of over pressure. I have measured 150 PSI tank pressure in my very warm shop, and Ken Parkinson has measured 200 PSI tank pressure in the blazing Florida sunshine. Believe the numbers, dig out and use your calculator, it is the strength of the materials that hold pressure, nothing else. Remember, a typical Hydro test is one third of yield. Use extreme caution if testing with gas, and never hydro a vessel to yield unless it is safely bunkered to contain an explosion.

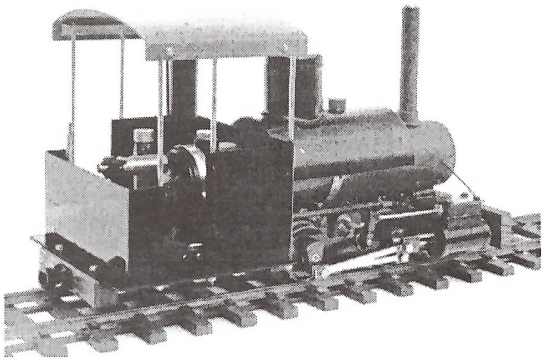
While I am at it, I have designed a neat little fill valve (see drawing) to fill our tanks directly from a propane torch bottle or a Coleman™ propane canister found in most sporting goods stores. The valve is made from 7/16" diameter brass bar. The O-rings are # -008. Thread the Fill Valve onto the Tank Valve until you can feel the O-ring. That's enough, do not torque. Invert the bottle and push down onto the valve as far as it will go without excessive force and then vent from the other valve as you would ordinarily do. After filling, the valve can be removed.

LIVE STEAM MODEL

'Bantam' Mine / Quarry Locomotive
0-4-0t

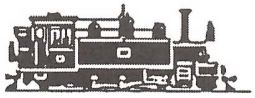
Options:- Paint Colours - Black / Dark Green
Crimson lake

Pressure Gauge



SPECIFICATIONS

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



Argyle Locomotive Works

241 Belgrave-Gembrook Rd., Clematis, Vic. 3782, Australia.
Phone / Fax 61 359 686573 Email: argyleloco@fhills.hotkey.net.au

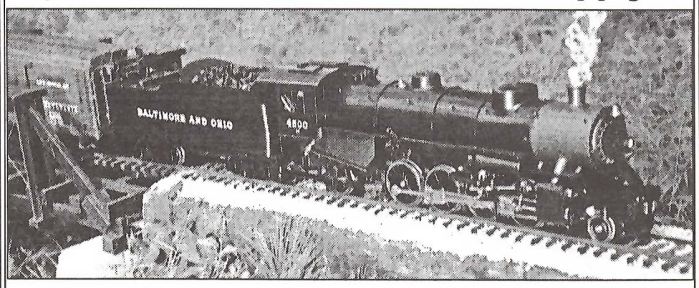
Available from: Sulphur Springs Steam Models Ltd.
PO Box 6165
Dept. RB
Chesterfield, MO 63006
Tel/Fax 314-527-8326
e-mail: SSSMODELS@aol.com

ASTER HOBBY

WORLD'S FINEST GAUGE 1 LIVE STEAM

KIT or BUILT

The Aster USRA 2-8-2 Light Mikado of your favorite RR is in limited supply!



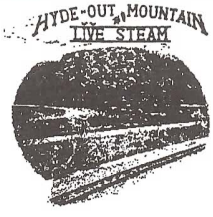
MANY OTHER MODELS CURRENTLY AVAILABLE

☆ ☆ ☆ ☆ ☆

U.S. REPRESENTATIVE & DISTRIBUTOR

CALL FOR INFORMATION

DEALER LIST ON INSIDE FRONT COVER



ASTER CATALOG & MANUAL	$15
DIAMONDHEAD 2-HOUR STEAMUP VIDEO	$29
LOCOMOTIVE TEST STANDS, KIT & RTR FROM UNDER	$100

89060 NEW RUMLEY ROAD JEWETT, OHIO 43986
740-946-6611

SIERRA VALLEY ENTERPRISES

SUPPLIERS OF ACCURATE, CUSTOM BUILT,
READY-TO-RUN 1:20.3 & 7/8" SCALE ROLLING
STOCK & METAL WHEEL SETS FOR GAUGE 1 & GAUGE 0

NEW! 7/8n2 Boxcar
(coming soon)

SEND $2.00 FOR
PRODUCT SPECIFICATION SHEETS
WITH PRICING TO:

SIERRA VALLEY ENTERPRISES
2755 SARATOGA AVENUE, MERCED CA 95340

21 Inexpensive Modifications to the BAGRS Project Loco

article drawings and photos by John Thomson

Part 3

Enhancements to a fun, inexpensive project loco...

9. Build a coal bunker. This will improve the looks of the loco and provide a "place" to put the alcohol fuel tank.

Material list:

- 3 - 3/32" x 7/16" x 3" spruce or basswood
- 6 - *3/32"* x 7/16" x 2" spruce or basswood
- 4 - *3/16"* x 3/16" x 1.7/8" spruce or basswood
- 2 - 3/16" x 3/16" x 1 - 3/8" spruce or basswood
- .040 brass wire-approximately 4"

Procedure:

Build the bunker by referring to Figure 9. Note that you will need to notch the rear decking of the loco for 4 stake pockets (two on each side) to hold the bunker in place. This will also allow the bunker to be removable. Drill holes in the sides of the loco main frame beams for the U- shaped .040 brass wire stake pockets.

Figure 9a

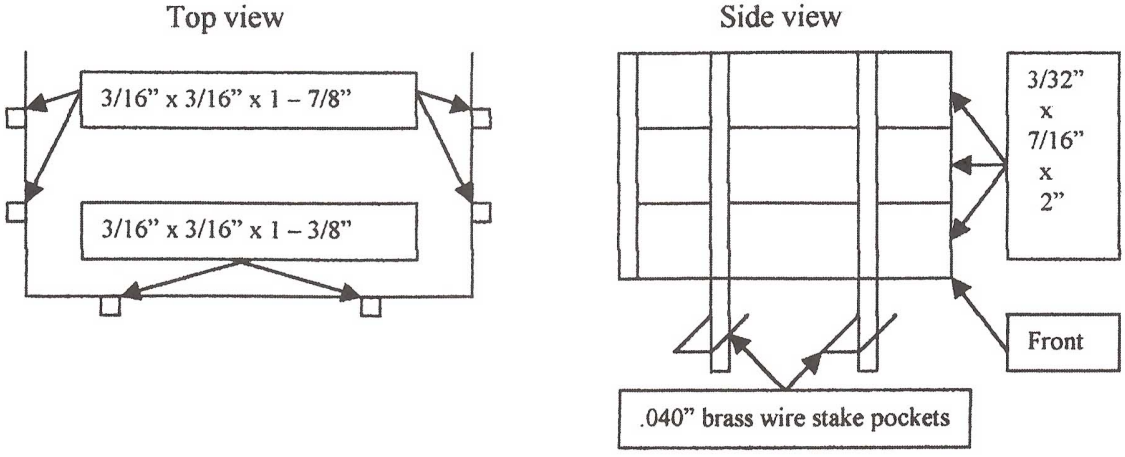
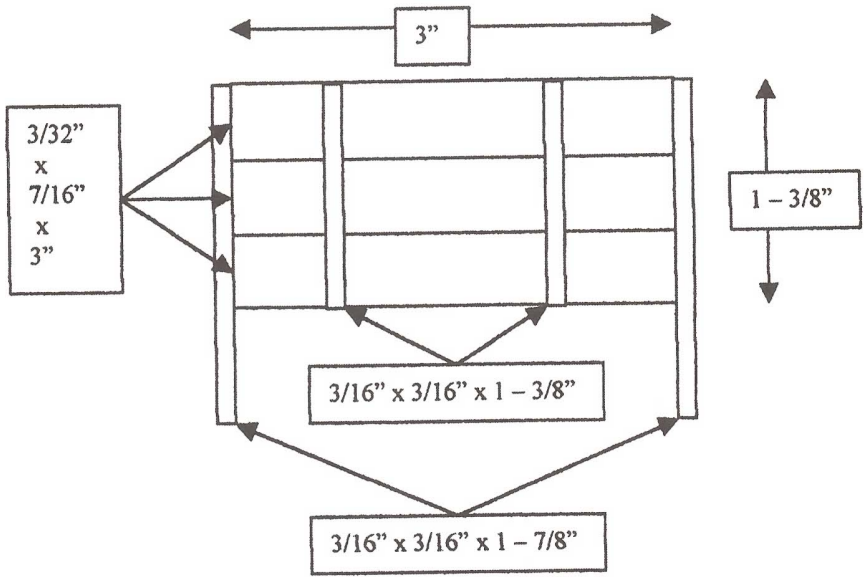


Figure 9b
Back view



10. Add a throttle valve *($5.00).* For the price of a brass aquarium type air valve, you can add a throttle to your loco. It doesn't allow as fine control as a needle valve, but it will allow slower and more scalelike speeds, and it is easy to add. This 2-gang valve (barrel type) has two levers that can be moved 90° from full off to full on.

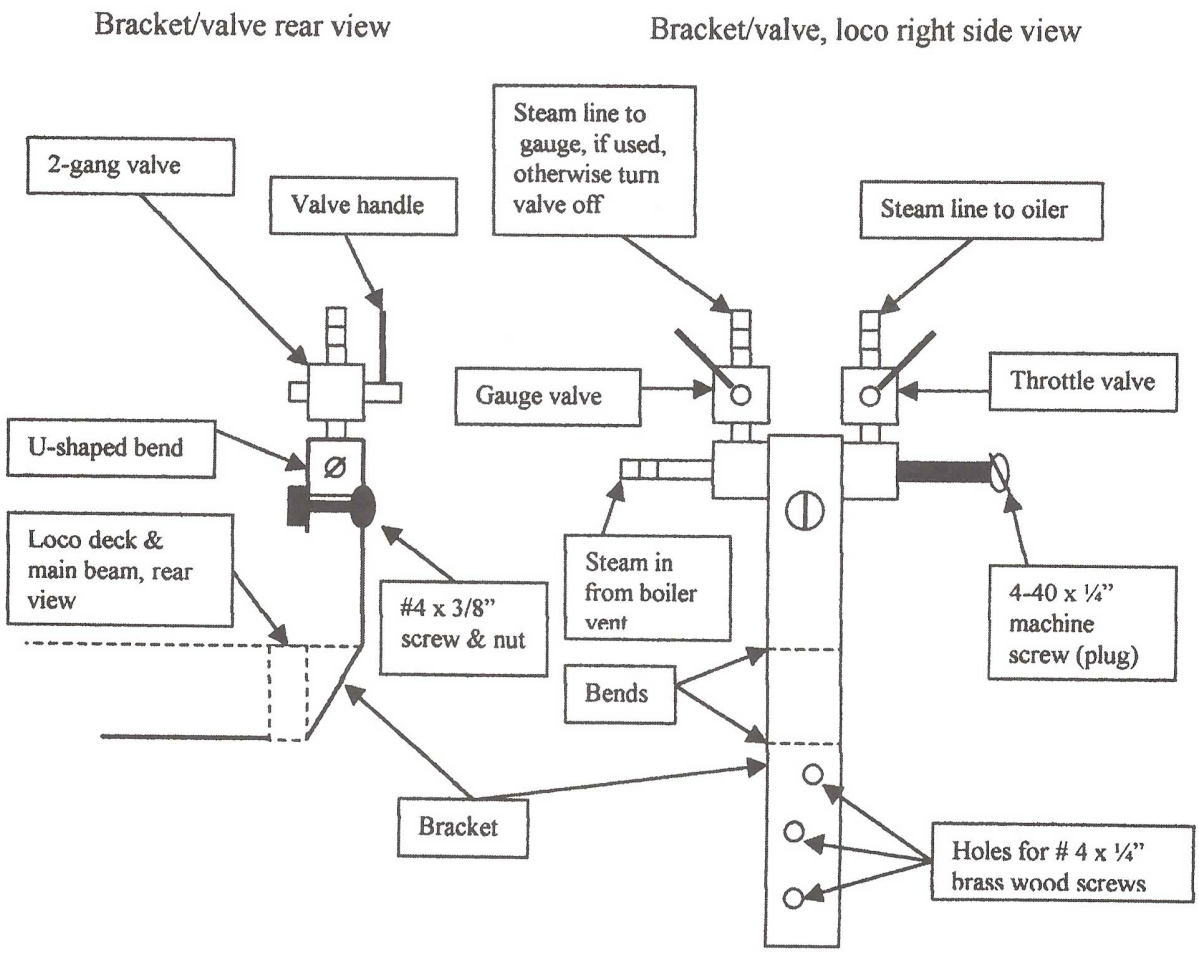
Materials list:

- TOP FIN brand precision 2-way brass gang valve (PetsMart)
- .025" x 1/2" wide x 3.1/2" long brass strip
- 2 - 2" lengths of 3/32" i.d. brass tubing
- 3 - #4 x 1/4" brass wood screws
- #4 x 3/8" brass machine screw and nut
- 4-40 x 1/4" brass machine screw

Procedure:

Fabricate a right angle bracket from .025" brass that can be attached to one of the beams on the bottom of the loco frame, and locate the valve on the right side of the boiler, just to the rear of the displacement oiler (Figure 10). Bend the valve end of the bracket 90° and place between the valves. Continue to bend the bracket into a U-shape between the valves. Using a #32 drill bit, drill holes for the #4 x 1/4" wood screws at the bottom of the bracket. Also drill a hole through the U-shaped bend for the #4 machine screw. Put the #4 screw through the hole and attach the nut to the screw. Snug the screw and nut to tighten the bracket to the valve assembly. Drill pilot holes for the wood screws, and attach the bracket to the bottom of the loco frame. Cut the tubing that runs between the boiler steam outlet and the displacement lubricator into two unequal pieces. Connect the longer piece between the steam outlet and the valve inlet. Connect the shorter piece between the valve outlet and the displacement lubricator. Plug the right side of the gang valve with the 4-40 x 1/4" machine screw. It will be necessary to tap the hole first. If you don't have a 4-40 tap, screw a 4-40 self-tapping metal screw into the hole to cut "threads". The machine screw should then thread into the hole. Use pipe joint compound on the threads for a good seal. Use the 3/32" i.d. brass tubing for valve handles. These will make the valves easier to control, and will stay cool to the touch. The 2nd valve can be used to connect a pressure gauge (Modification #14). WARNING: NEVER CLOSE THE THROTTLE VALVE COMPLETELY WITHOUT A SAFETY VALVE. EXCESSIVE STEAM PRESSURE WILL BLOW THE SILICONE TUBING OFF THE BOILER VENT, RESULTING IN A SPECTACULAR AND DANGEROUS BLAST OF HOT STEAM!

Figure 10



11. Add lead weight for traction (under $10.00). Unless your track is absolutely level, the two wheel front drive will slip and loose traction quite easily, particularly if you are pulling a load.

Materials list:

- Three, 6 oz. packages of stick-on lead weight (Dubro Kwik-Stick # 351 - hobby shop)
- 3M Weatherstrip Adhesive

Procedure:

Attach the weights to the underside of the loco deck. Add as much as you can find room for, putting more weight closer to the front drive axle. I added 18 oz. to my loco, for a total weight of 3 pounds empty. 2/3 (two pounds) of the total loco weight is on the front drive axle, and 1 pound on the rear axle. A thin layer of 3M weather strip adhesive (spread on and allowed to dry for a few minutes) will help the stick-on weights to adhere to the wood of the undercarriage.

12. **Add cars to pull.** Northeast Narrow Gauge makes 1:20 scale, 4 wheel car kits that are inexpensive ($20-$35 each), easy to build, and look great with the project loco, or, any other small, narrow gauge loco. Contact them at:

Northeast Narrow Gauge
P.O. Box 191
Wiscasset, ME 04578
Phone: 207-882-7154
FAX: 207-882-9884

Couplers are not included. A pair (@ $4.25) of the Ozark Miniatures OM-106-2 link and pin couplers are supplied with the loco kit. Purchase the additional couplers you will need from:

Ozark Miniatures
Dept. RB, P.O. Box 107
DeSoto, MO 63020
No Phone # given
FAX: 314-586-2480

13. **Link and pin coupler improvements ($ .65).** The Ozark links are prone to bind and will derail a car occasionally.

Materials List:

- 1/16" brass wire cut into 2.1/2" lengths - or
- .025" x 1/4" brass stock cut into 5/8" lengths.

Procedure:

Replace the links and pins with a "staple" shaped double pin made out of 1/16" brass wire (Figure 13a). The double pin is also easier to connect and disconnect. Another solution is to make new links out of 1/4" wide by .025" brass strip (Figure 13b). Cut the links 5/8" long and drill a hole in each end to accommodate the Ozark pins. You will have to round the ends of the brass links so they won't cause a bind on curves.

Figure 13a

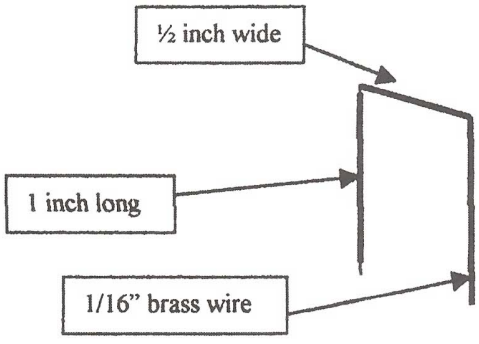
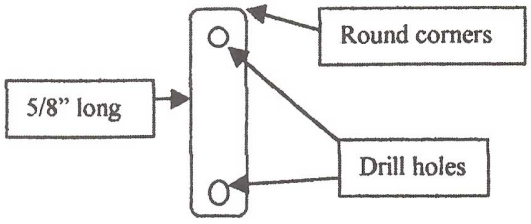


Figure 13b



14. **Steam Pressure Gauge ($7.99 from K Mart automotive dept.).** Although a miniature steam pressure gauge could be installed on the boiler, they are quite expensive. An alternative is to modify a tire pressure gauge, and use it to monitor the performance of the burner/boiler with the loco on blocks. If you want to monitor steam pressure on the run, simply connect the gauge with a sufficient length of silicone tubing to allow it to be installed in a hopper car behind the loco. After modification of the gauge, connect it to the left valve outlet of the throttle gang valve, using an appropriate length of silicone tubing. The steam engine should begin to run unloaded @ 5-7 psi. At 10-12 psi, it should have enough power to pull a few cars on a level track. Steam pressure will run 10-20 psi at full throttle. At 1/2 throttle, the pressure will register 20-30 psi. Connecting the blast tube will cause the pressure to increase several psi at all throttle settings. With throttle closed, pressure will very quickly increase to 30 psi, the pressure at which the safety valve (Modification #20) will lift.

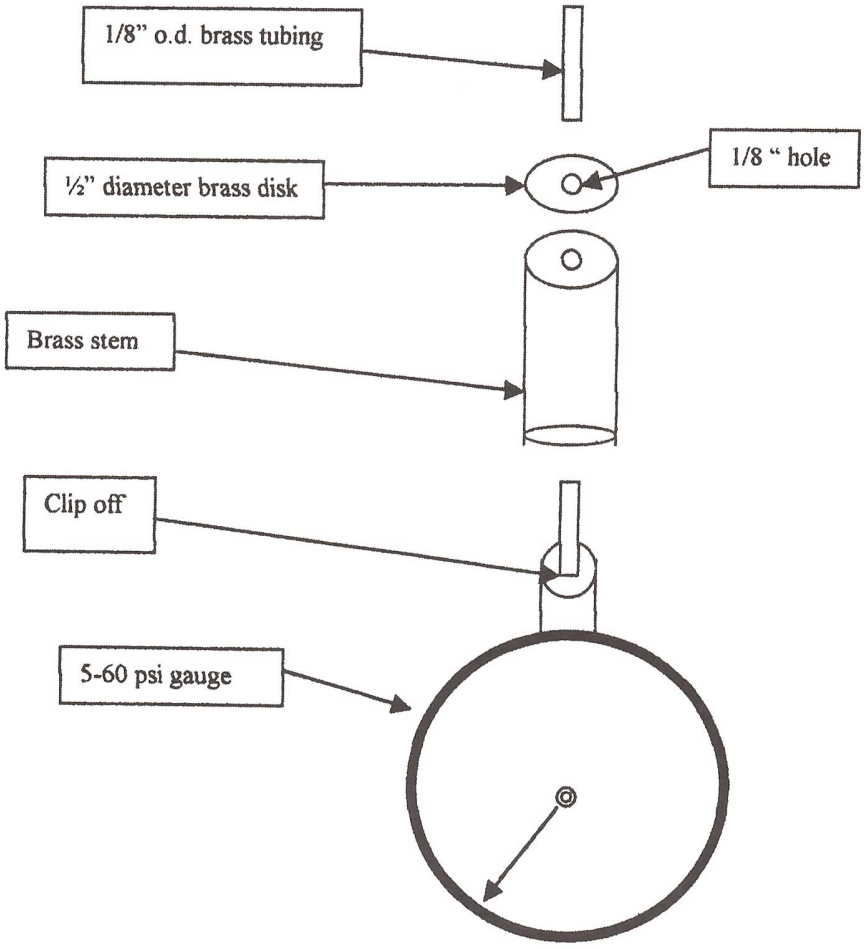
Materials list:

- Monkey Grip Brand High Performance Tire Gauge, 5-60 psi, Model M8854
- .025" scrap sheet brass
- 1" length of 1/8" o.d. brass tubing
- 4% silver solder
- 12" medium silicone tubing

Procedure:

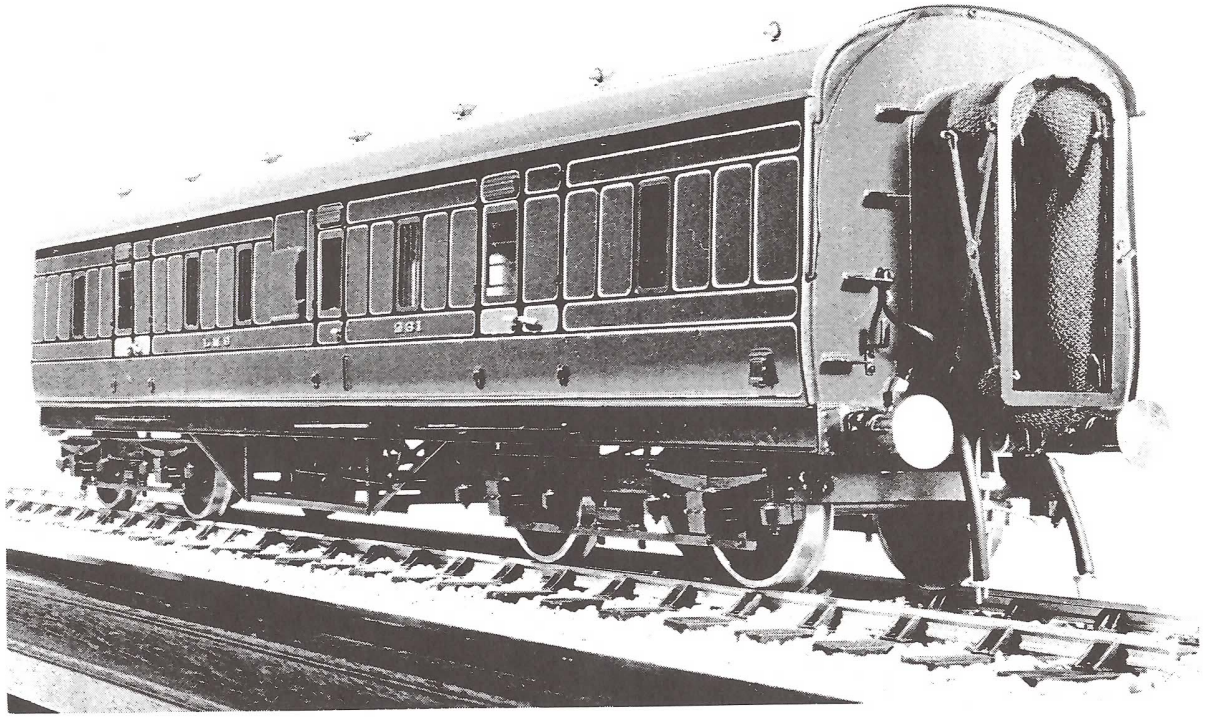
Remove the brass stem from the gauge by unscrewing it. Remove the two rubber tubing gaskets and brass washer from inside the brass stem, and discard. Clip off the brass protrusion from the nipple of the gauge. Cut a 1/2" disk from a 25 mil thick brass sheet. Drill a 1/8" hole in the center of the brass disk. Push the 1/8" brass tubing into the disk so that it sticks out the other side by 1/16". Place the stem upright on a firebrick. Center the brass disk on the top of the stem, with the tubing pointing upward (see Figure 14). Silver solder the disk to the stem, and the tubing to the disk. Attach the silicone tubing to the 1/8" brass tubing and the gauge is ready to use.

Figure 14



L. M. S. Period Piece...

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



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

At a glance specification summary:

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

THE FINESCALE LOCOMOTIVE COMPANY
MARLBOROUGH, WILTSHIRE, ENGLAND

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

KATIE Revisited

text & photos by Tom Myers

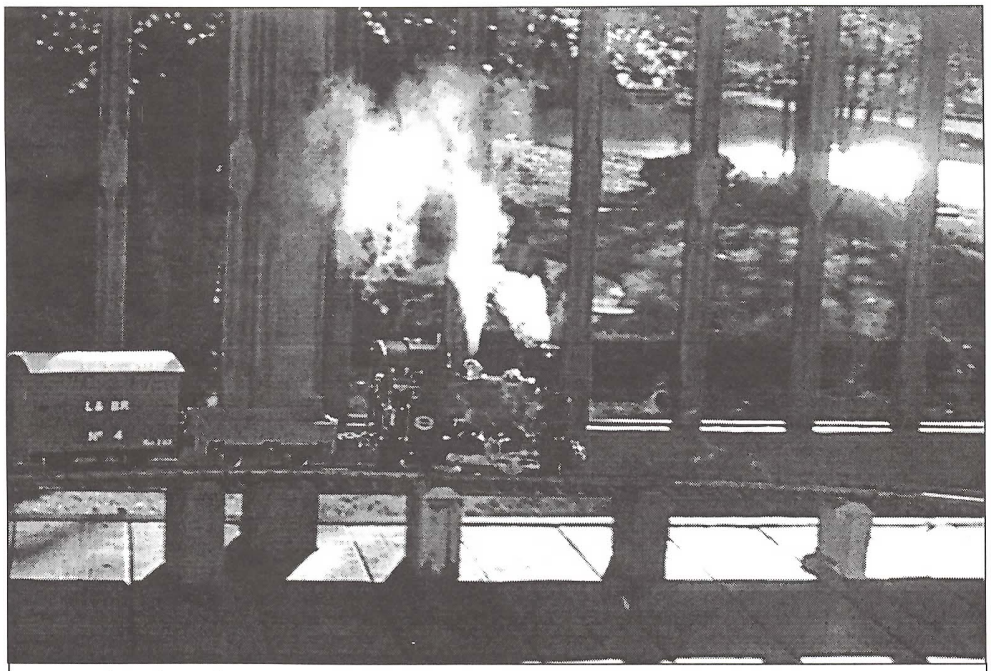
KATIE caught my eye the first time I saw her on the internet. I've always wanted a saddle tank locomotive, and I am partial to European designs. I broke down and ordered one from Paul Kenney at Bayou Ltd. and could hardly wait the two months it took for delivery, but finally UPS arrived carrying my treasure.

After the first run, I e-mailed Paul and told him that, like most Roundhouse locomotives, KATIE was boring - she ran perfectly right out of the box. To make things more interesting, this time I ordered a manual version and opted to install the R/C myself. But first I had to run her...

KATIE lit off immediately, and came up to 40 psi in short order. I let her blow off so I could take a photo opportunity.

I didn't want anyone mistaking her for an electric; and besides, butane is available and cheap where I live. Forgive me, Al Gore!

My track takes the circumference of my upper deck, and then crosses over and drops down at about 3% to take the circumference of the lower deck. The throttle was set low, so it would not overspeed going downhill. When KATIE reached the upgrade, she stopped for about 5 or 6 seconds, built up a slightly higher head of steam, and then began slowly up the hill. It was a cool day, so there was a good plume. You could count the 1-2-3-4, 1-2-3-4 of the chuffs. She continued that way for the rest of the run, without changing throttle setting. She ran so well on manual operation, I half considered abandoning the R/C conversion. But I do like the remote control, so I pressed on.

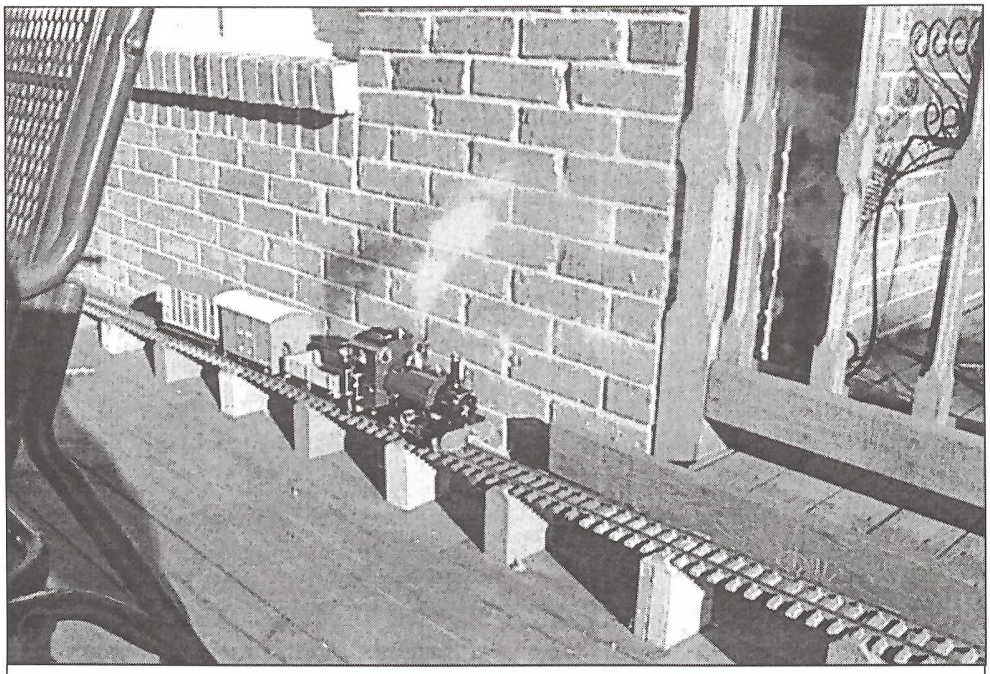


Backlit by the setting sun, KATIE shows the world that she's a real steamer, and not a sparker.

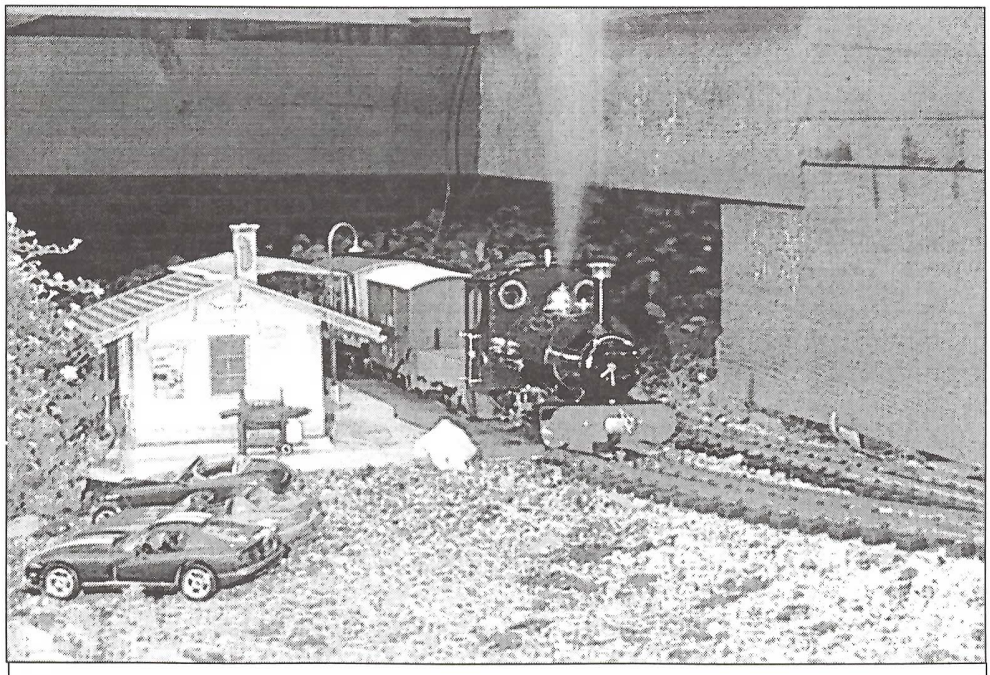
Roundhouse makes an R/C conversion kit for the BILLY that contains everything you need to convert KATIE, except the radio. Micro servos are required, approximately 1" x 1" x 1/2" in size. The kit has, among other things, a replacement R/C type regulator that is more sensitive, for better servo operation, and relies on an 'O' ring to ensure positive closure with minimum force. The only challenge I encountered was mounting the on/off switch. Apparently the BILLY has a cutout in the cab floor, which was absent in KATIE. I found a suitable location alongside the receiver under the cab floor, although it did require some trimming of the rear coupler mounting.

All in all, it would be an understatement to say I am pleased with KATIE. In her blue paint job, she could be the prettiest locomotive in my collection, and she runs like a Roundhouse.

There are few good starter locomotives on the market in the $400-$700 range. KATIE is a good second locomotive, for someone moving up from their starter loco. It's moderately priced, good looking, and a superb runner. Good job Roundhouse!



KATIE works the 3% grade on the Author's railway. Grades are no problem for this tough, powerful little lokie.



Safety lifting, KATIE moves slowly away from a station stop and out onto the mainline.

Steam Enjoys a Growth Spurt in Texas

story & photos by Jim Crabb

Sometimes you just have to take the bull by the horns...

The small scale live steam hobby is flourishing in South Texas in the form of the (H)ouston (S)mall (S)cale (L)ive (S)teamers. An idea discussed between two people at Diamondhead in 1998 with six potential "suspects" (at least one of whom it didn't even own a steamer) has turned into a regular event with as many as two dozen participating almost monthly.

Who joins a live steam association (group, club, fraternity)? Why would anyone want one? How do you get started? How do you keep it going? When, if ever, is one necessary?

The following is a true story. Garden railroading in the form of live steam is alive, well, and growing all across the United States, largely due to the efforts of folks like Marc Horovitz (founder and editor of *Garden Railways* magazine) and Ron Brown (founder, owner and editor of *Steam in the Garden* magazine). But the continued success and growth of the hobby will depend largely on the efforts of you and me.

...and this is how it began. Dennis Grigassy approached me in January 1998, lamenting the fact that this year's event was almost over for Diamondhead...but wouldn't it be neat if we could get together in Houston and do it again in a couple of months? He knew that, including the two of us, there were a total of six people who might be interested.

However, one was a builder (without peer - Charlie Mynhier) who might not participate (boy, was he wrong there!) Another, George Werner, had an engine on order for almost two years and was getting pretty discouraged. Don Kroeger (the man who started it all in Houston 15 years ago) was elderly and not getting around too well (in fact, Don passed away this fall).

Regular attendees at a steamup in Texas would probably include (front row, kneeling, l. to r.): Marvin Nite, Jim Crabb, George Werner. (standing, l. to r.): Dennis Grigassy, Charlie Mynhier, DeLayne Hudspeth, Bill Courtright, John Thomson and Dave Young.

Then there were Bill Courtright (who got me into this) and Caleb Roberts, who each owned a Frank S and were active in the local garden railroading club (HAGG - Houston Area G Gaugers.)

We could just get together and

talk -- but wouldn't it be a lot more fun if we had a track on which to run? Dennis had dismantled his ground level track in preparation for selling his home. We could run at the indoor track at the mall, but that had its own set of problems.

Well, to cut to the chase -- I agreed to host a steamup in two months. That meant I had to build a track! I had experimented with four earlier versions of an outdoor track, both elevated and ground level, the previous couple of years. Nothing motivates action like commitment to something that doesn't exist.

Fortunately, I got some inspiration when I visited Clark Lord in Las Vegas in February and had the opportunity to run on his awesome, full scale mile elevated track. (Thank you, Clark!)

I came home and convinced my wife to let me build a temporary, dual loop track (ha - it stayed temporary for 18 months until I totally rebuilt it this summer!) under our patio cover. Since this was to have 10 foot radius curves it pretty well consumed the whole patio area and then some. Then I called Ron Brown and got a list of everybody who subscribed to *SitG* in the Texas, Oklahoma, and Louisiana area. (Nothing like thinking big!) I also got a list from the AWNUTS publisher and used the Diamondhead registration list. We sent out invitations, made phone calls, and begged. Guess what?

Bill Courtright gets 'em on the rails for the Southbound mixed.

Borrowing the cliche "if you build it they will come", it really works! And they keep coming!

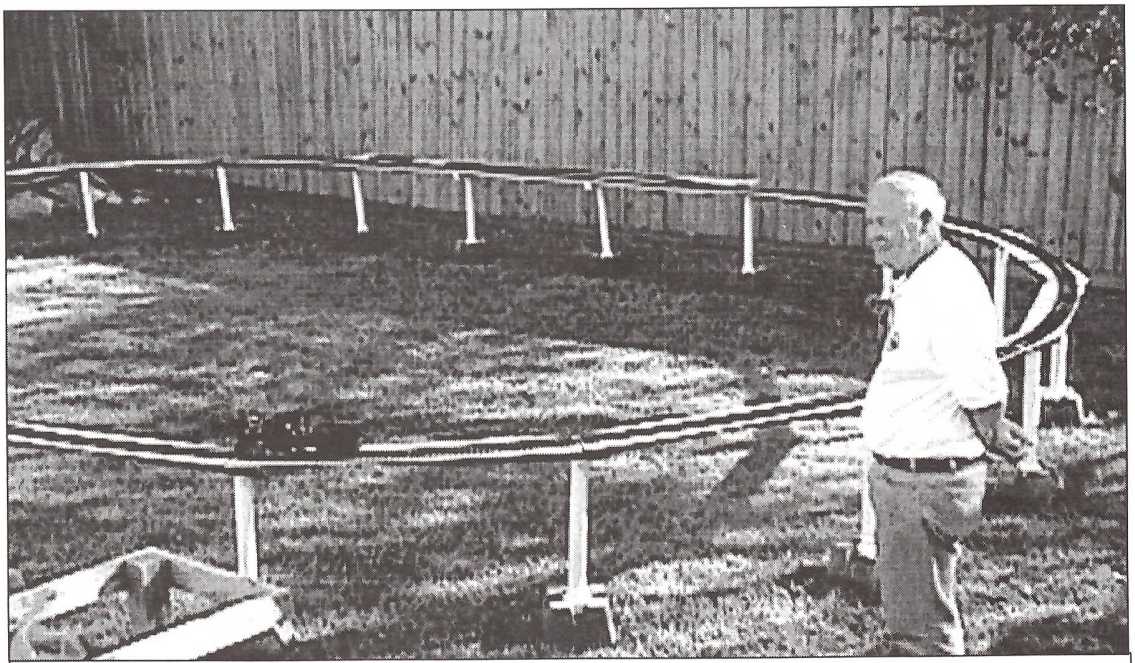
We had almost 20 people that first time (including friends - these were the ones we begged). People came from as far away as Houma, Louisiana (Paul Kenney of Bayou Limited, Inc.) and San Angelo, Texas (Carl Malone). People were really anxious to boil water, and they didn't want to wait another year!

They also wanted to make this a regular event, so we agreed to meet every month at my track unless there was a scheduled event (Diamondhead or NSS), or somebody else wanted to host a steamup.

Since that first meeting, Marvin Nite enhanced his track in San Marcos to accommodate elevated live steam operation, and we have been there the past two Septembers. This spring Ken Matticks and Dan Fuller hosted a steamup (in the UK they call them "run days") in Dallas.

Dan had to construct a portable 45mm track to go along with Ken's 32mm track, since that is the gauge most of us are running.

Last month John Thomson (a recent member of only one year) invited us to his new track in Mesquite , outside of Dallas. Dennis Grigassy and friends constructed a semi-portable track at his new home, where he hosted the group last fall. Dennis has since gone back to ground level track for his grandkids' benefit, and his elevated semi-portable track is



George Werner with his Roundhouse William, running light to get some run-in time on the new loco, on the semi-portable track at Jim Crabb's monthly steamup.

Jim Crabb keeps an eye out for traffic while Marvin Nite gets his train ready for a run.

now also located in my backyard.

The Sunday after Thanksgiving the HSSLS steamed all day on my two tracks comprising almost 300 feet. There is always an abundance of good fellowship. We have added a lot of new regular participants, like Dave Young of Santa Fe, Texas and Steve Speck of Houston.

It never fails that at least one engine is being field stripped, 'cause it's nice to have all of the "experts" around when you are doing something like that!

We are fortunate that Charlie always comes with his most recent projects in hand. If there is a better machinist in our hobby, I haven't met him (or her) yet. When Paul Kenney is able to attend, all kinds of tweaking and cosmetic changes are liable to meet the eye.

Obviously, people aren't coming for the food because I only serve hot-dogs. The gourmet eats are at Marvin's and John's homes.

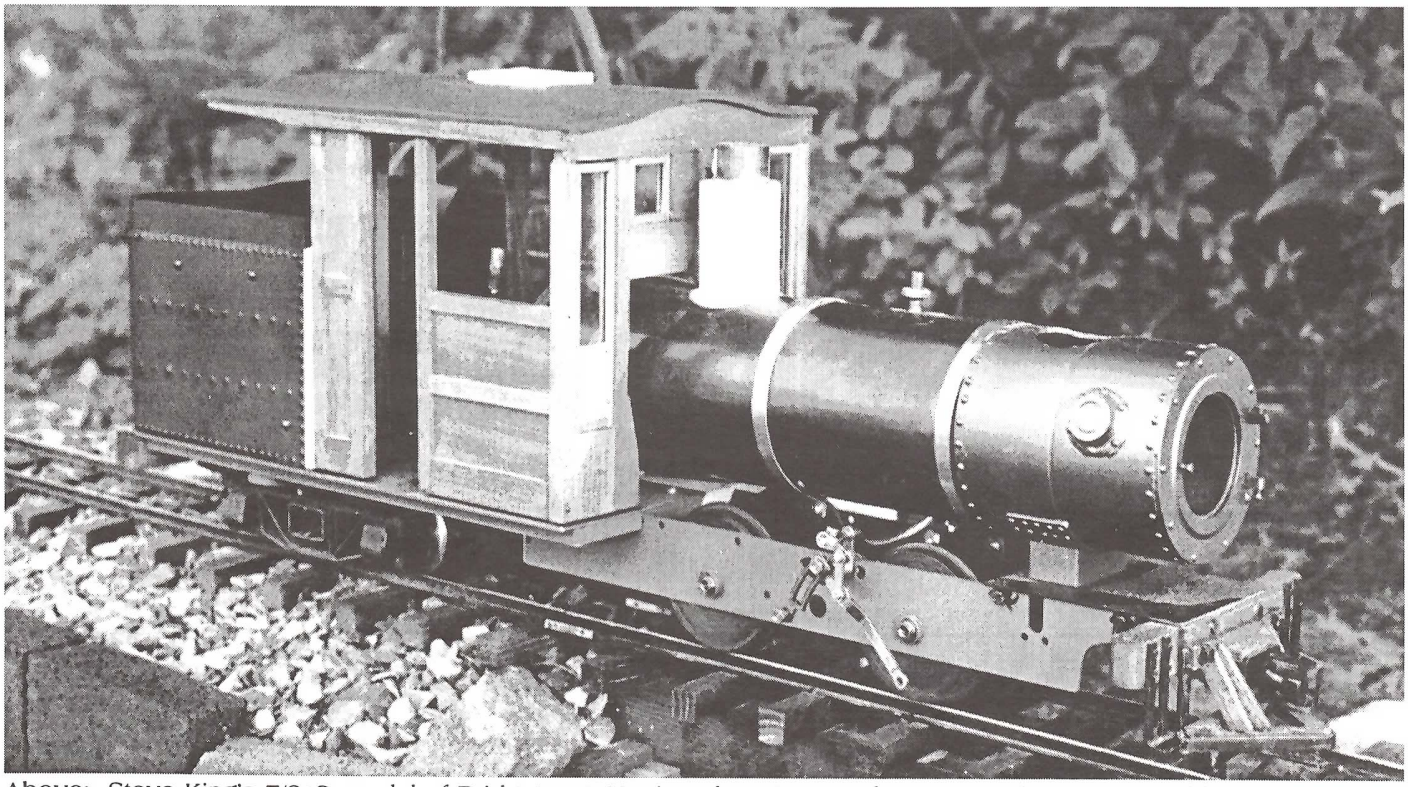
Another side benefit happens during the in between times. My job takes me all over the state, so I always have an engine in my suitcase. I've had the pleasure of running with Carl Malone in San Angelo, Marvin in San Marcos and John Thomson in Mesquite.

And, John and Carl have both had the occasion to work in Houston, which always initiates an impromptu steamup on the Flamingo Bay Preservation Railroad.

Postscript: George Werner finally gave up on his original order and took delivery of WILLIAM a few months ago, which is running just fine, thank you!

Steam Scene...

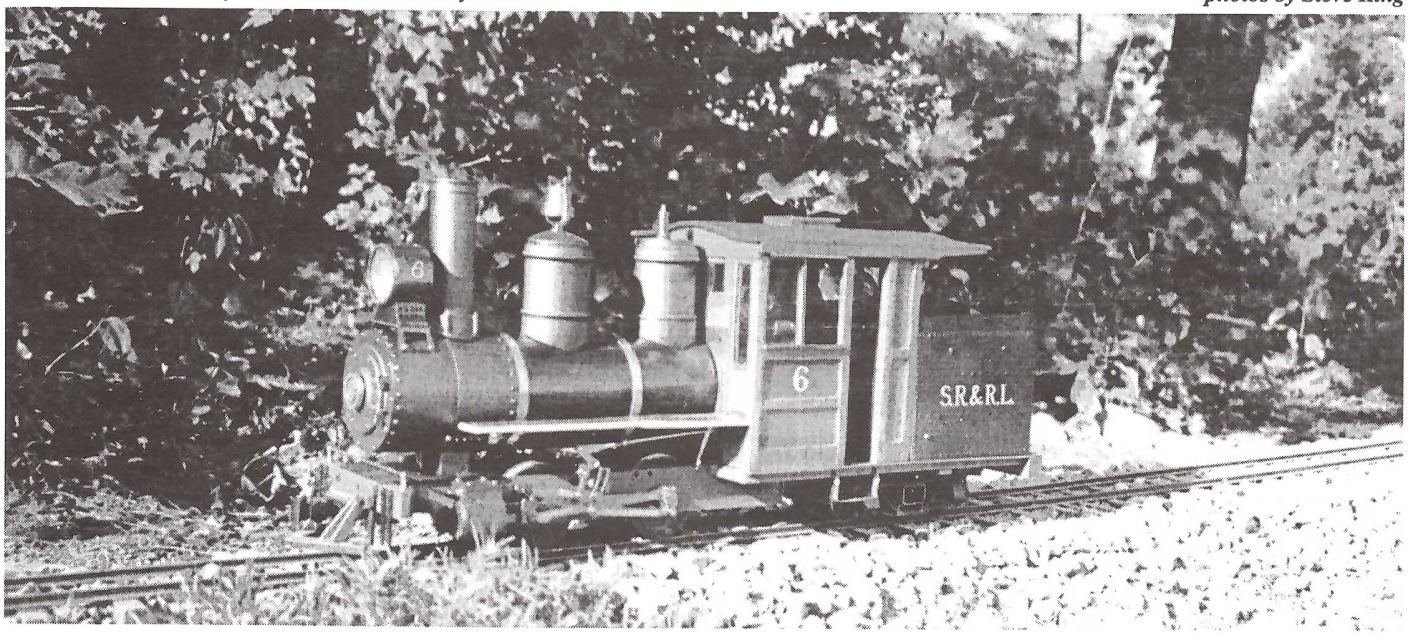
We invite you to send your favorite photos for this feature. PLEASE label each photo with vital information, such as photographer, subject, where when and why. Stick-on mailing labels work great for this. Don't try to write directly on the back of the photo. It embosses the front and ruins the photo.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

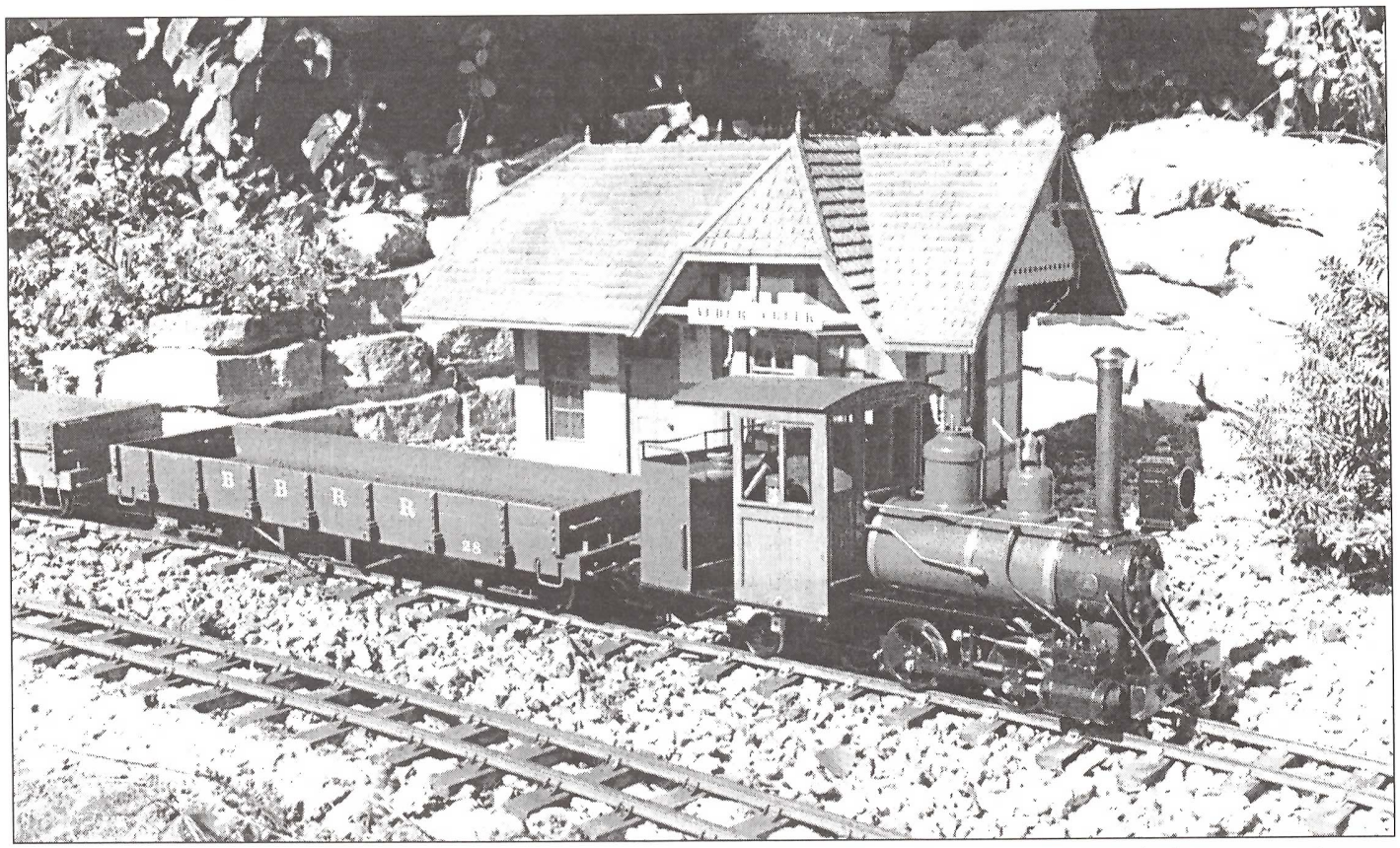


Above: Steve King's 7/8n2 model of Bridgeton & Harrison loco Nº 6 under construction. Note modified Roundhouse frames with oversized drivers. Rear platform was fabricated from 1/16" steel plate and 3/16" square stock.

Below: 7/8" scale Forney Nº 6 as originally built in 1996. It has now been refitted with different style domes and propane fuel system has replaced the butane system.

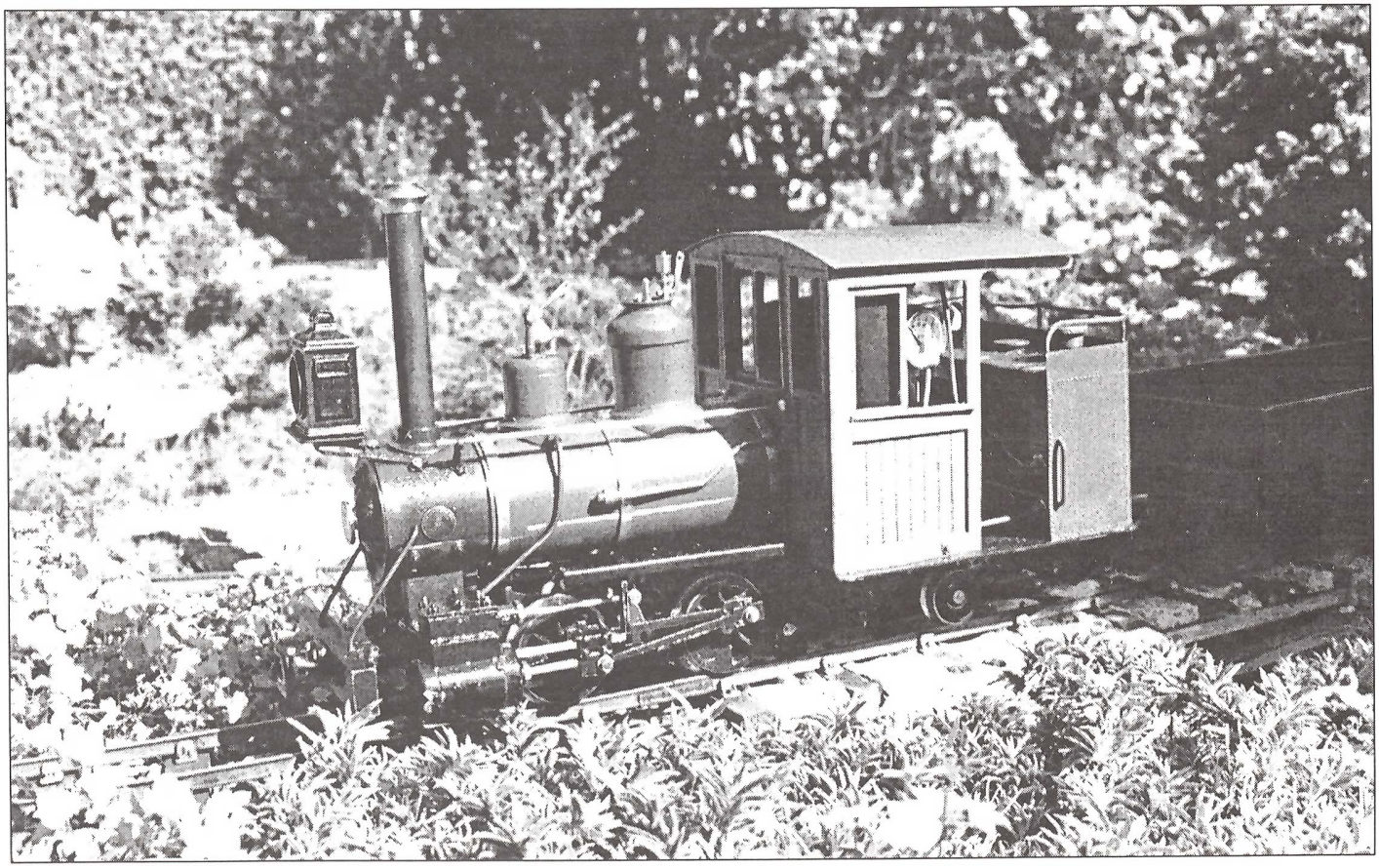
photos by Steve King





Argyle PHILADELPHIA Baldwin 0-4-2T on test on David Pinniger's Burnham & Berkshire RR, shown paused for photos at Alder Creek above. This is the straight stack version with slip eccentric valve gear.

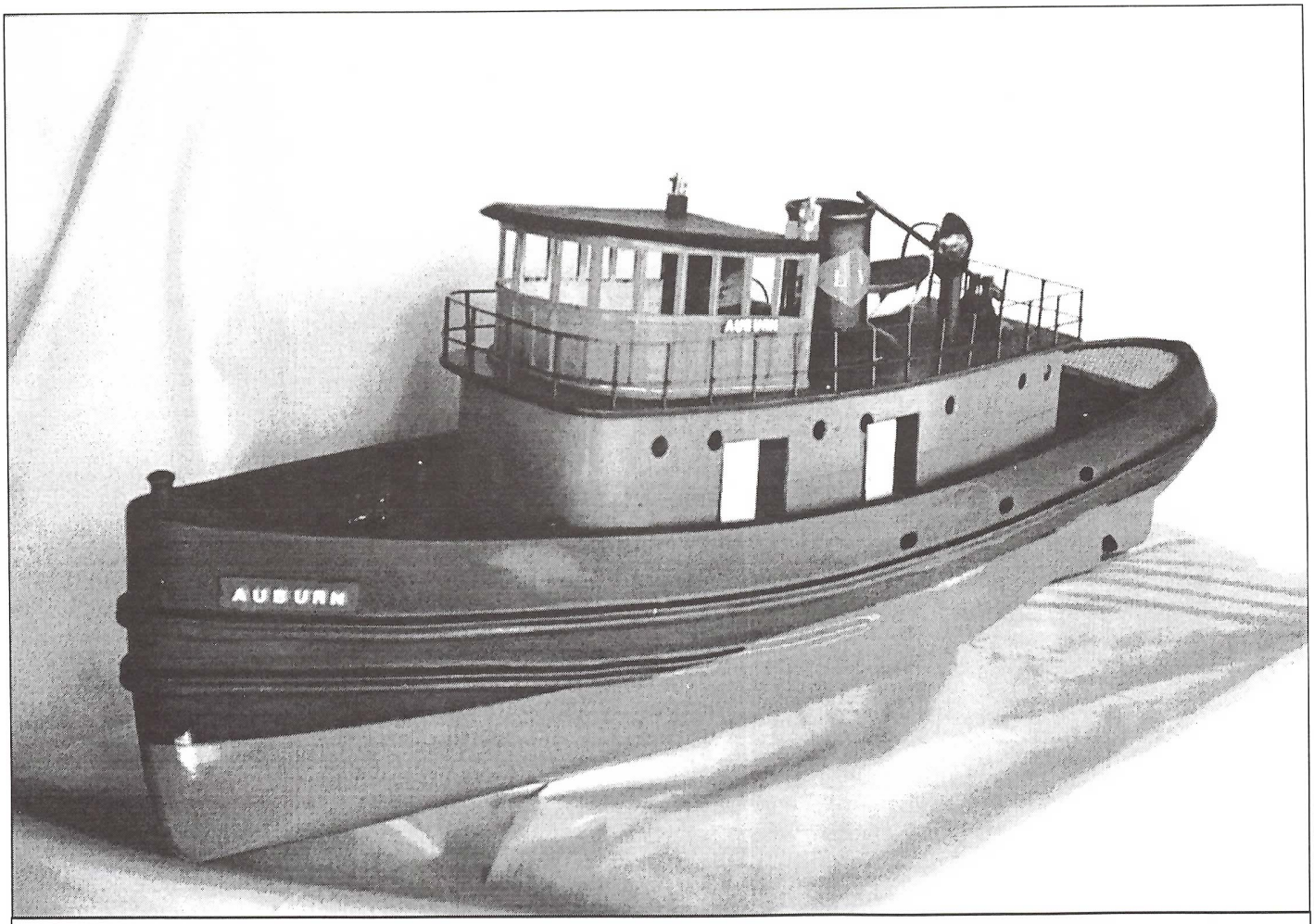
Photos by David Pinniger



The Unsinkable Foam Hull

text and photos by Ken Parkinson

Inexpensive, and it won't go to the bottom...



The author's unsinkable, foam-hulled Auburn tug. Hard to believe it started life as a chunk of blue styrofoam!

I hope my article on building boat hulls of foam *(SitG № 48)* has been useful to some of you. With this article I will conclude the subject. However, some questions have arisen from the first article.

When attaching the foam formers for the bulwark, do not glue them to the deck. You have established a graceful sheer line and you don't want to spoil it. Cover the bulwarks and hull at the same time with the glass cloth and epoxy resin. You will then

have a good strong bulwark worthy of it's name. Hold these pieces of foam in place with nails or wood cocktail picks.

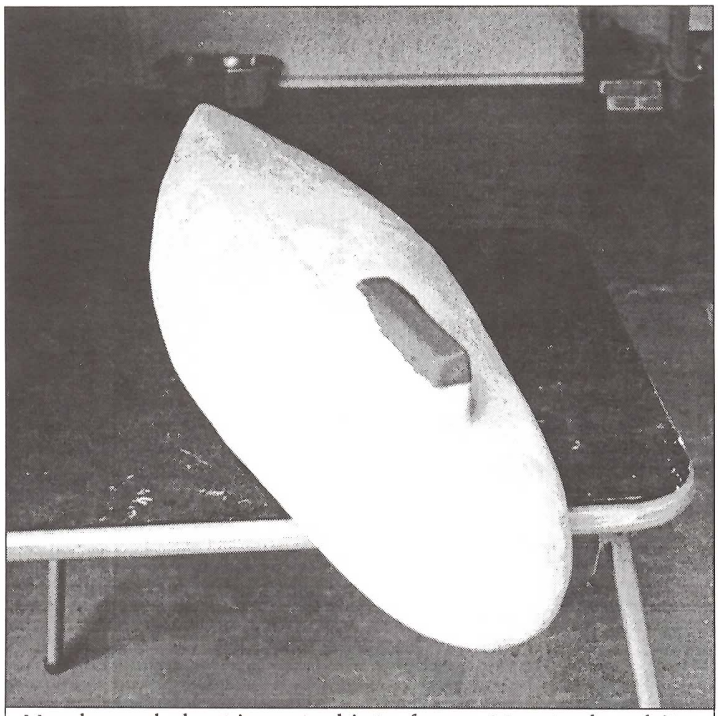
To avoid a hard glue line between the laminations of foam, apply only a 3" to 4" strip of glue down the centerline of the hull. Hold the laminations in place until the glue dries with wood picks as used above. This will make it much easier to develop a fair hull shape. Spackling compound makes a very inexpensive and easily sanded filler if necessary. It is easy to trowel and dries quite quickly.

IMPORTANT! Don't forget to remove the plastic "skin" from the blue foam before gluing!

Insert a piece of hardwood into the deadwood where the skeg is screwed to it. A good source of 1/8" plywood is to purchase door skins from the building supply dealer. Coat the pieces well with varnish or epoxy and they will last a very long time without warping or delaminating. This material is used for the deck and the deck house/pilot house.

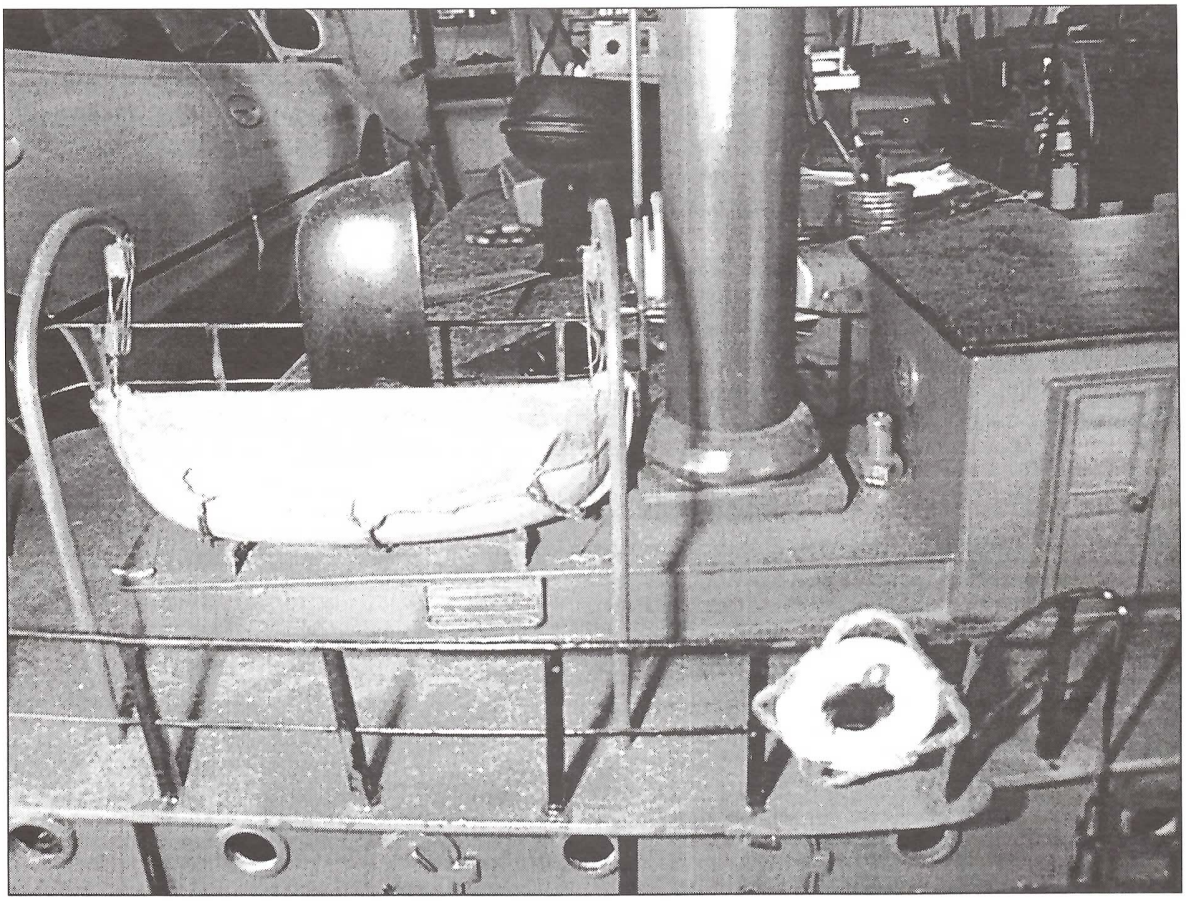
When excavating out the area for the boiler and engine in the hull, be generous and allow space for any ballast that will probably be required. In a work boat it may be necessary to add several pounds of lead. In my boats, three have full bottoms with little or no deadrise. They need plenty of ballast. With my Victorian period launch, it has fine lines and a high degree of deadrise. It requires no ballast.

Since my primary interest is in railroads and locomotives, I have two railroad tugs. One is a model of a tug owned by the

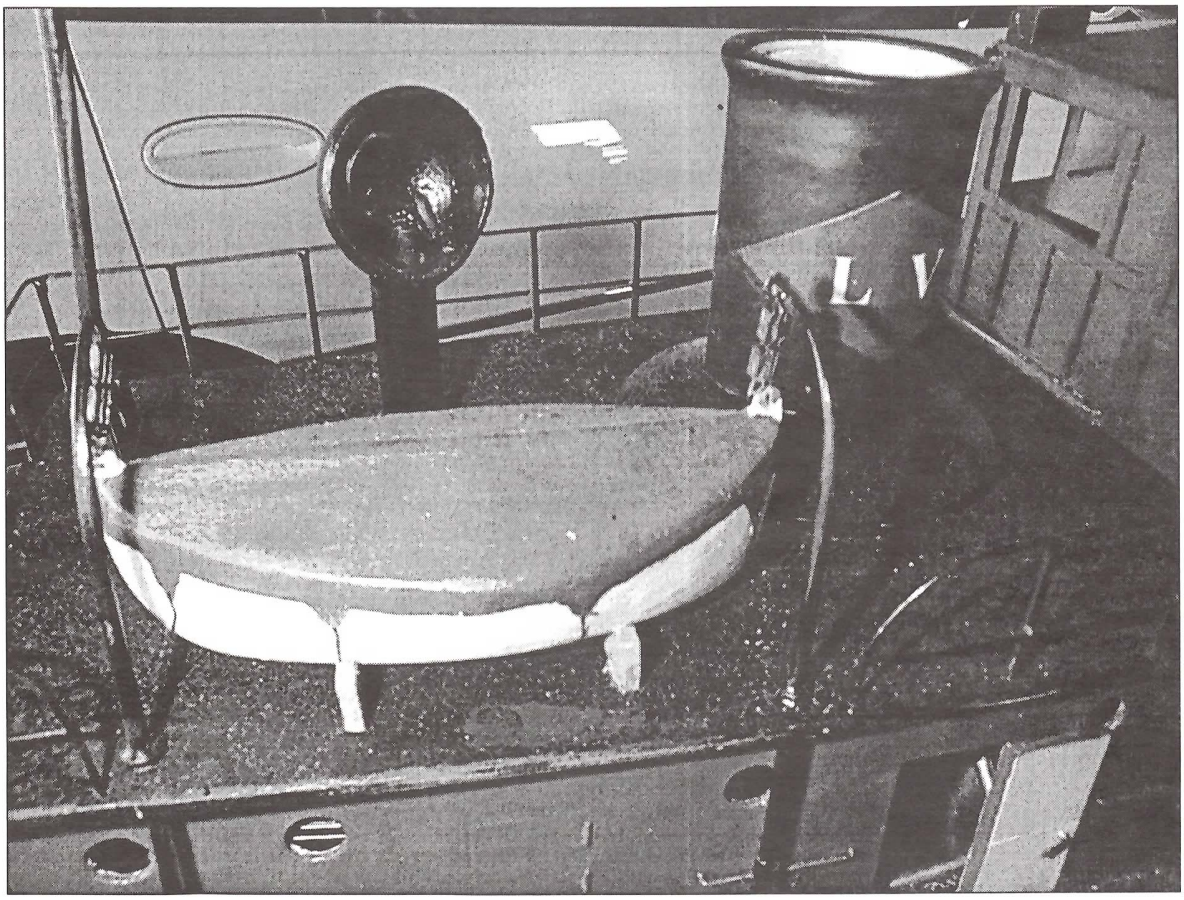


Hardwood skeg inserted into foam. Use teak, white oak or any hardwood.

Rear 3/4 view of AUBURN shows the detail on the aft end of the pilothouse, the skeg, and that barn door rudder.



Two views of very realistic lifeboats, carved from foam, painted and detailed.



Pennsylvania Railroad and used in New York harbor.

The present project is modeled after a Lehigh Valley Railroad transfer tug. The low bridges on the Harlem River made it necessary for this tug to have a very low stack and pilot house. The draft for the boiler was produced by induction fans. The AUBURN was built in 1910, had a 750 horsepower steam plant and was 97 feet overall length. This works out well for a 3/8" to the foot model that is very easy to handle.

A photo of the AUBURN appears in the book *ON THE HAUSER.* It contains over 200 photos of tug boats. This photo is all that I had to build this model. The photo can be dated by the use of expendable wood fenders. *(see AUBURN photo on the outside rear cover of* SitG № 52, *showing the wood fenders in place on the tug.)* They were in common use until the abundant availability of used truck and automobile tires.

The Pennsylvania Railroad had more than 100 tugs over the years. They worked the New York Harbor and the Chesapeake Bay area. Most railroads that reached the Atlantic coast had a fleet of tugs. My list shows 13 railroads. owning tugs. Don't feel you are straying away from railroads when you are building a tug. They were also part of the great steam era.

I will be happy to answer any questions directed through the editor.

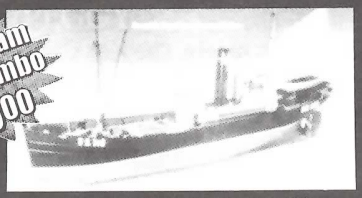
See the outside back cover of this issue for a full color photo of the author's AUBURN on his home pond in SW Florida - ed.

Cheddar & Calder Craft . . .

The Finest In British Craftsmanship At Great Prices!

2 NEW KITS!

Ship & Steam Engine Combo $915.00



Peggy

The Peggy is of a typical Herring Drifter built at the turn of the century. Over 450 metal fittings, detailed GRP hull and superstructure. Deck and cabin are pre-printed ply, main deck and other structures are die cut ply. Full size drawings and instruction manual complete this fine kit. Superstructure in fully removable to make steam plant installation a pleasant experience.
Scale 1:24, L 48", B91/2"
PEGGY KIT $365.00

Ship & Steam Engine Combo $930.00

Alte Liebe

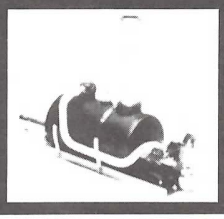
The German tug boat "Alte Liebe" can now be launched again in 1:25 scale using the Puffin steam plant. Over 450 metal fittings, laser cut superstructure and deck, detailed GRP hull, full size plans and instruction manual included. L 40", B 10¼" Price $385.00

Milford Star

This small attractive side trawler, typical of the thirties and forties offers hours of enjoyment as a highly detailed static display or a functional steam powered marval. Fiberglass hull construction. Scale: 1:48, L 36¾", B 6½"
MILFORD STAR KIT $285.00

CHEDDAR PINTAIL HORIZONTAL

Compact and powerful! A must for the engine room of the "Milford Star", "Isis" or "Joffre".
PLANT DIMENSIONS ALL
Length 8 5/8", Width 3 1/2", Height 7"
Horizontal Pintail Deluxe Machined Kit
Only $486.00



Ship & Steam Engine Combo $694.00

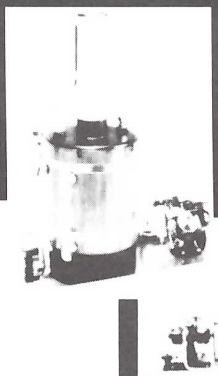
Ship & Steam Engine Combo $679.50

JOFFRE

River Tyne ocean-going tug. Over 300 metal fittings, fiberglass hull, and printed ply decks. Like the original tug, this realistic model performs well on the water. Scale: 1:48, L 30½", B 7½"
JOFFRE PRICE $269.00

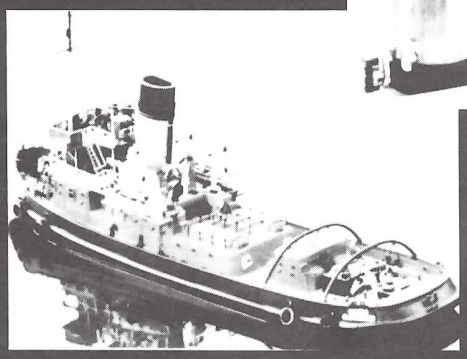
CHEDDAR PELICAN HORIZONTAL/VERTICAL

This Pelican boiler as well as all other Cheddar model boilers are contructed totally of copper and silver soldered. They have been pressure tested and come with certificate. The Pelican features Vee Twin oscillating cylinders. A touch of elegance from a by-gone age.
Pelican Deluxe Vertical OR Horizontal Machined KitOnly $642.00



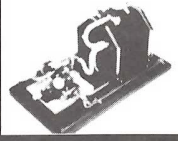
PUFFIN HORIZONTAL /VERTICAL

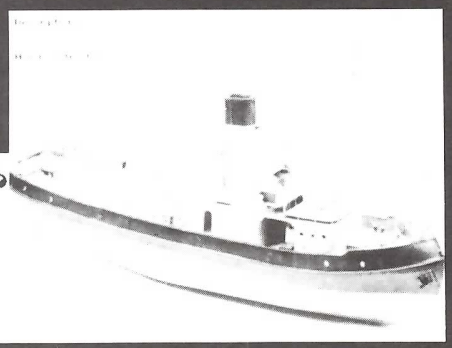
A comparable plant to the Pelican but in an in-line twin format. Great for open launches as well as enclosed environments.
Puffin Deluxe Vertical OR Horizontal Machined Kit
Only $642.00



PEGASUS VEE 4 DELUXE

A superbly balanced powerful Vee 4 with a 3 drum water tube boiler and piezo ignition. This engine is capable of handling the most demanding of situations.
Pegasus Vee 4 Deluxe Assembled & Painted Only $1,299.00





IMARA

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

Marie Felling

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

SHIP	SUITABLE ENGINE	COMBO SPECIAL	SHIP	SUITABLE ENGINE	COMBO SPECIAL
Imara or Marie Felling Twin Screw - $515	Puffin Max Deluxe $899	$1,299	Milford Star - $285	Pintail Horizontal - $486	$694
Imara or Marie Felling Single Screw - $515	Pelican $642	$1,041	Alte Liebe - $385	Puffin #2 - $650	$930
	Puffin $642	$1,041	Joffre - $269	Pintail Horizontal - $486	$679
	Pegasus Vee-4 $1,299	$1,632	Peggy - $365	Puffin #2 - $650	$915

SHIP & STEAM COMBO PAKS INCLUDE SHIPS, DELUXE STEAM ENGINE KITS (2 CHANNEL RADIO NOT INCLUDED.)

Aeromarine Laminates INC.

RD 4 BOX 100 • ROUTE 13N
SEAFORD, DELAWARE 19973
(302) 628-3944

DISCOVER MasterCard VISA

Aeromarine Laminates is the Largest U.S. Distributor of Quality British made Cheddar model steam plants and parts. We are exclusive U.S. Distributors of Calder Craft Scale Marine Models. We also carry a complete line of Blue Jacket, Laughing Whale, Midwest, Model Shipway marine kits call for pricing.
CHEDDAR MODEL STEAM KITS CATALOG - $6.00 EA. • CALDER CRAFT MARINE KIT CATALOG - $6.00 EA. • BOTH FOR $10.00

STEAM STUFF CATALOG #5 $4.00

CHEDDAR MODELS CATALOG $6.00

MAXITRAK CATALOG $6.00

We are the USA agent for Argyle Steam Locomotives!

We've got those *GOTTAHAVIT* items for scratchbuilders, kitbashers and everyone who owns a small-scale live steam loco. BA fasteners, taps, dies, valves, pressure gauges, wick packing, teflon packing, gas filler adapters, fibre washers, copper washers, Sievert propane silver soldering outfits, silver soldering supplies, wick material, boiler insulation, center drills, check valves, cylinder castings, machined cylinders, dowel pins, gaskets, gauges of all kinds, Taig and Sherline lathes and mills, locomotive wheels, locomotive test stands, Steam in the Garden back issues, thread locking compound, syphons, silicone tubing, servo smoothers, R/C goodies, water glass tubing, water injection valves, screws & nuts & washers, safety valves, brass, bronze, steel cast iron.....and much more...in stock!

Sulphur Springs Steam Models, Ltd.

P.O. Box 6165
Dept. RB
Chesterfield, MO 63006

Tel/FAX 636-52STEAM (636-527-8326)
e-mail: SSSMODELS@aol.com

THIS MONTH'S FEATURED PRODUCTS

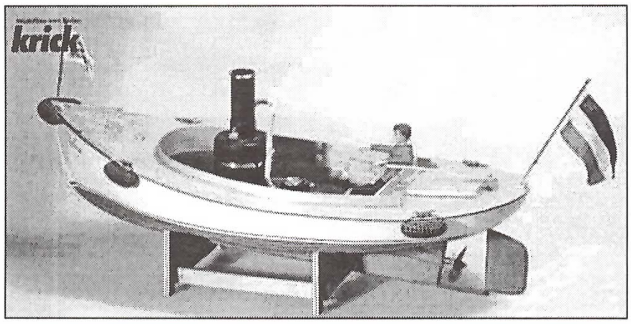
- ***NEW ITEMS!***

• Cheddar Models Ltd.

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

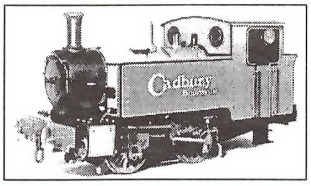
• Krick Boats

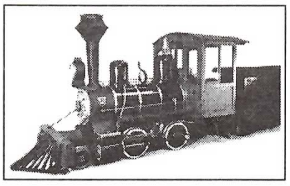
You'll need a boat for that new Cheddar steam plant, and Krick features a wide range of boat kits...there's something for every taste and skill level. The Krick ANNA, shown below, is broad-beamed and stable, even in rough waters.

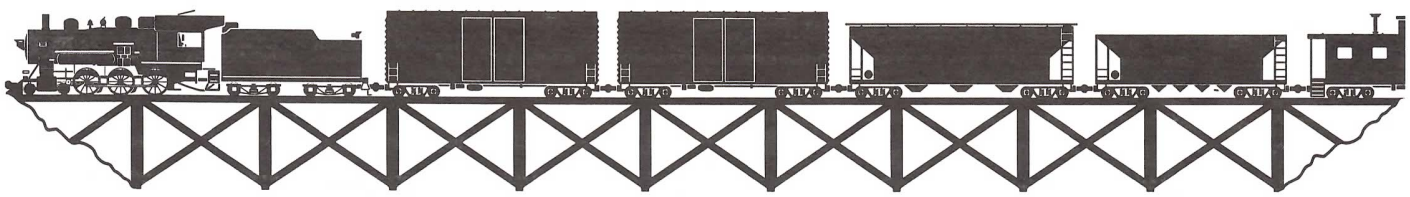


• Maxitrak

SSSM is now the North American agent for Maxitrak locomotives and accessories! Available in steam, electric and gas mechanical, as kits or factory built, and in all the popular ride-on gauges. Maxitrak kits can be purchased in sections, making them affordable for just about every budget. Shown below are SWALLOW and Li'L JO, just two of the beautiful and exciting locomotives in the Maxitrak catalog. Contact SSSM for your copy, and see how easy it can be to own a steam loco in 3.1/2", 4.3/4' or 7.1/2" (7.1/4") gauge.







SWAP SHOP

For Sale: Aster Reno 4-4-0, excellent condition, excellent runner. Converted to Butane/Chedder burner & custom gas tank. Also have original alcohol burner & tank. Copied manuals included. $2500 PLUS shipping. Bill Chamberlain 407-884-9325, Wilsteam@aol.com (54)

For Sale: Excess to my needs due to scale change. 1) Wrightscale Porter, early version, slip eccentric, $900.00. 2) Argyle Philadelphia, nearly new, $900.00. The pair for $1700. Contact: Rich Chiodo, 9 Janvrin Rd., Hampton, NH 03842. 603-926-4858, 7-9 pm est. email: rchiodo@vicr.com (54)

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

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

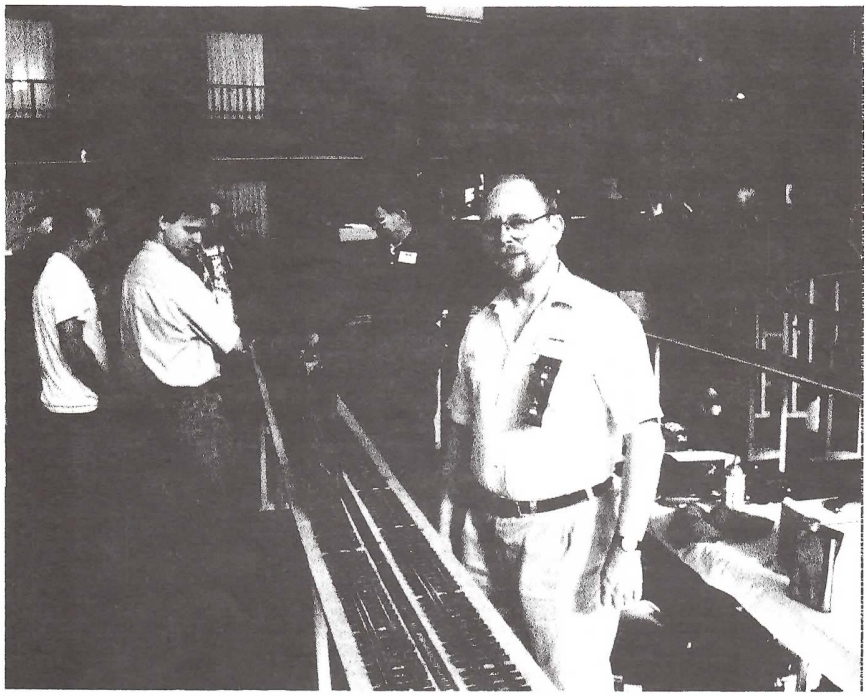
Swap Shop listings are offered at no charge as space permits. No dealers and no phone-in ads, please! Send your listings to SitG, P0 Box 335, Newark Valley NY 13811, or fax to* 303-975-6211*(24 hours), or e-mail to <rbrown5@stny.rr.com>. Ads must contain sellers name, plus address and/or phone number.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

Merlin Countess on the Lea Rig Light Railway in the U.K. ***photo by David Pinniger***

End of the Line

COMING NEXT ISSUE - DIAMONDHEAD 2000 REPORT!

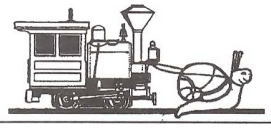
And here's a little something to whet your appetite...

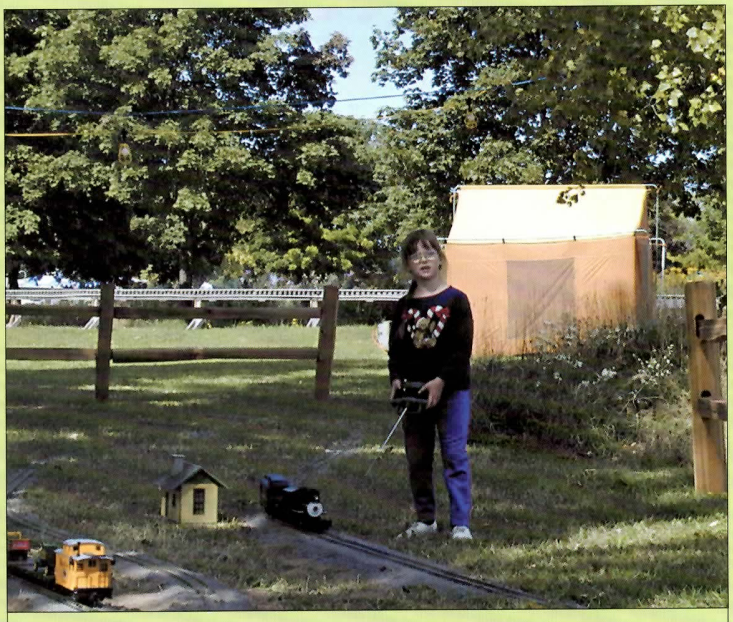


Richard Longley, UK (Mr. Brandbright - front right) enjoys a bit of track time on one of the Diamondhead 2000 tracks. Richard is always ready to assist anyone with a problem, and I've never seen him without a happy smile. There was plenty of track time for everyone at DH 2000, and way too much to see and do in three days. Happy Steaming! *digital photo by Ron Brown*

ADVERTISERS INDEX

Please tell our advertisers, "I saw it in SitG!"





Dave & Barb Conroy's granddaughter, Becky Gutchow (7 1/2), takes a turn at the "remote" of Granddad's Pearse Colorado steamer during a summer steamup at the Finger Lakes Live Steamers club site in Marengo, upstate New York. Dave tells us that Becky first operated this steamer when she was just 4 1/2 years old!

digital photo by Barbara Conroy


KATHRYN


AUBURN
L V
AUBURN