

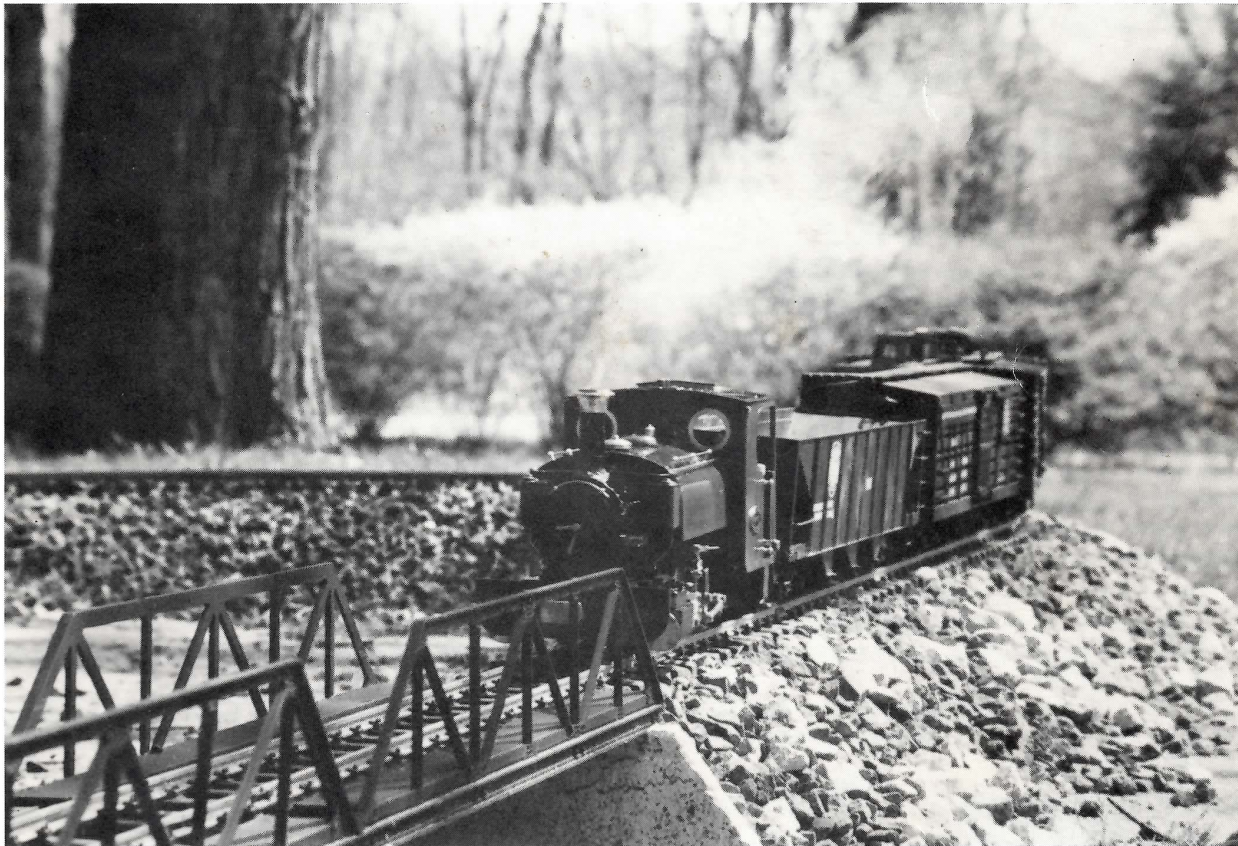
Steam in the Garden

Magazine

*Gather, friends, while we enquire,
into trains propelled by fire.....*

Volume Three Number Six

May/June 1993



INSIDE.....

Two Loco Reviews -

Roundhouse Engineering's "JACK" and Steamlines' "LITTLE GIANT"

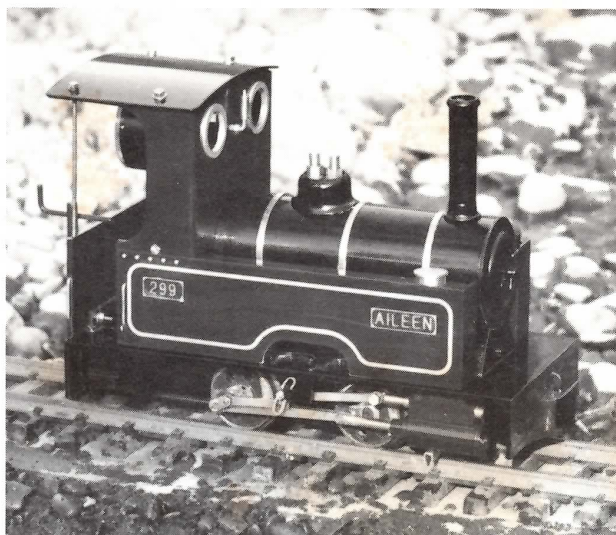
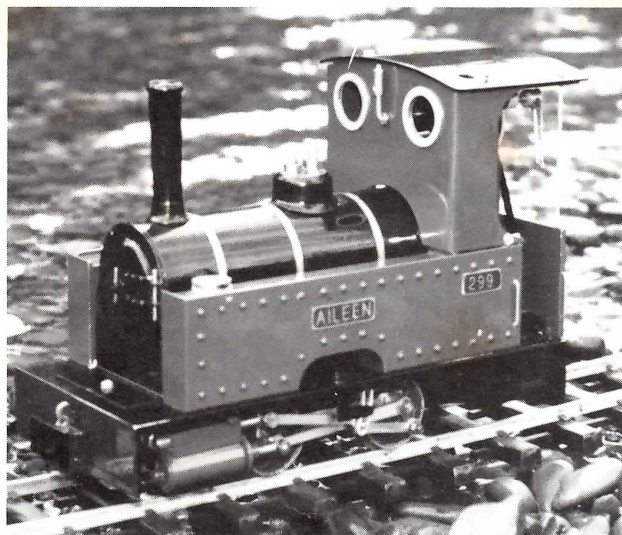
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ON THE COVER:

Steam power is still alive and well in western Connecticut, as evidenced by this photo of a Roundhouse Engineering "JACK" on the point of the morning freight and pulling hard as it rounds the bend and heads up the grade toward Ricket's Bridge on Matthew Labine's Keeler Creek Short Line.

Photo by Catharine Labine

Another Birthday!

Some of you may have noticed that this issue marks the end of our third year of publication. Some time during those three years, probably while I was asleep, SitG was magically transformed from a funky little photocopied newsletter with no pictures to a real, honest-to-gosh magazine. Well, okay.....a real magazine would probably have at least a color cover photo and thin, shiny pages inside. But it makes me feel good to call it a real magazine, so humor me - I work cheap!

No matter what you prefer to call it, SitG is still the only publication in this particular niche (that we know of). We were pleased to hear Jerry Reshew comment not long ago that SitG is performing a vital service to the small-scale live steam community in North America -- as both a forum and a source of information.

Pretty heady stuff for such a tiny operation as this, and it also carries with it a responsibility to be accurate, fair and honest in every way we can. This was our goal from the very first issue - to give our readers the information they need and want, and to give it accurately and honestly, without bias.

It's not always easy to be unbiased, particularly when we feel strongly or passionately about an issue or a product or an individual. And we're certainly not without our imperfections, as Faithful Assistant will quickly point out. But we'll keep working at it for as long as enough of you out there want us to do so - just as long as you keep writing or phoning now and then to let us know how we're doing.

Happy Steaming!

Ron

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Steam in the Garden magazine

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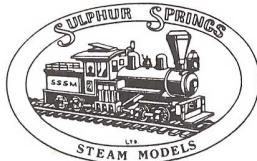
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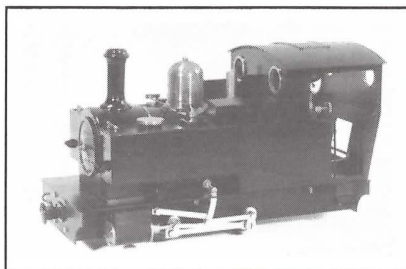
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R P O Mailbag

Letters from all over

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

* * * * *

San Leandro, California

Dear Ron,

I'm finally subscribing to your wonderful publication. Sorry it's taken so long. Wish I had been able to meet you at Grover Devine's house awhile back. Perhaps you will be out this way next summer for the Convention.

I love steam and currently have 3 locos - Aster Baldwin 0-4-2T, Aster Climax (unbuilt) and a Mamod kit (under construction). I sprung the boiler on the Baldwin when I re-inserted the tapered brass plug in the front non-functioning fire tube. It had fallen out. This was included with West Lawn's modified burner kit. Marc Horovitz was nice enough to turn up a plug and solder it in for me, so now I need to reassemble it and get it running again.

I have no railroad as yet, so Grover allows me to borrow SPC right of way. I've purchased some of the new Llagas Creek Railways code 250 steel rail for the future line. Our old 1922 bungalow needs a lot more fixing, and with a new baby and a garage to build I hope to start the railway before Year 2000.

Thanks - looking forward to my first issue.

Sincerely,
John Carlson

* * * * *

Valinda, California

Dear Ron,

Let's have less crying about meths. It gets too boring reading fights about what works better. I like 190 proof denatured alcohol and have had no problems, so tell 'em that if it works don't fight about it. We need more about tricks in tuning

engines, ideas about modifications for all types of engines and MORE PICTURES. Will send some soon!

Thanks,
Donald Noon

* * * * *

1993 INDIANA TRANSPORTATION MUSEUM SMALL-SCALE STEAMUP

September 17, 18 & 19
Noblesville, Indiana

In March 1991 Dr. Howard Blackburn, Dr. John Bloxdorf and several others met in a dining car on the grounds of the Indiana Transportation Museum to discuss construction of an outdoor track for gauge 0 and gauge 1 trains. At the museum's opening in April 1992, the first multi-gauge loop was ready for operation. The second loop was completed several weeks later.

At present, there are two 380 foot elevated multigauge loops, which will accomodate gauge 0 (2 rail and 3 rail), gauge 1 and Lionel Standard Gauge. Elevation varies from 30 to 48 inches. The rail is steel strap laid in notched ties. Curve radii vary from 15 foot minimum to 30+ feet. The long wheelbase gauge 1 engines and scale length passenger cars can be run with ease. As the venue is not lighted, steaming will be limited to daylight hours only.

The two new inner loops will be a double tracked (code 250 Llagas Creek Railways steel rail) gauge 1 layout with steaming bays and storage tracks. The steaming bay/storage area is shaded.

The main focus of this event is running gauge 1 and gauge 0 live steamers. At present, no banquets, mixers or breakfasts are planned. Motel accomodations should provide space for vendors and clinics after dark.

Distilled water, methanol and Iso-Butane will be provided. A fast food vendor will be on the grounds.

For those who like full sized engines, we hope that either the museum's restored coal fired ex-Nickel Plate 2-8-2 or one of the ex-Monon F-units will be available to pull a train to nearby Fishers, Indiana.

If you'd like to attend, please write for more information.

John W. Bloxdorf, M.D.
2540 North Ninth Street
Terre Haute, IN 47804

The Fitter's Bench

by Crankpin

Establishing a Rapport With the Workpiece

'Tis true that I allowed as how we would wind up our discussions of the drill press in this issue, though there are a few additional tales to be told that will add a bit to successful drilling operations, but here at Crankpin Hall the available time for this month is short due to pressing seasonal domestic matters. It is for this that I must beg off from laying out in this episode several of the remaining subjects which I promised to cover. I do hope you will understand. However, be assured that we will take up these remaining matters again and nothing that was originally intended to appear here will be left behind. And now to work.

For any given machining job there are going to be several components, or variables if you will, that must be adjusted and balanced for each other in order to do a consistently good job, such as in drilling a clean, reasonably round and straight hole. These components include the type of material being drilled, the size and type of drill, the depth of the hole, the speed of the spindle or cutter, and the presence of lubrication or not. There might be one or two others that I have forgotten but none of them pop instantly to mind and I don't have time to go hunting so these will have to do. As the machine operator, it will be your job to monitor and adjust the interaction of these variables so as to optimize the results obtained. In what ways does one go about this task, you may politely inquire? Read on, my neophytic friends, and all will surely be revealed.

The Secret Sauce

One of the most important abilities that one can acquire while developing his or her skills in model engineering work is an overall sense of "Feel" for the work in progress. This is the ability to use the combined senses of sight, hearing, and touch into a sort of communication with the tool and the work. In this process one observes the emerging finish on the work, listens to the sound of the cutting tool, and feels for the vibrations produced by the machine. From this you can absorb the message that is continuously being sent about how things are progressing. Just as putting your ear to a railhead can tell you of an approaching train long before you are able to see it, so your senses will help you to know if a workpiece is turning out as it should or if a candidate for the dust bin is in the making. This will be true not only for drilling work, but for milling, boring, threading, turning, filing, and any other workshop operation which involves metal removal.

As important to the production of good work as this is

however, it is most difficult to adequately describe the concept of Feel in textbook fashion as it is only learned by hands-on experience. All I am able to do is to advise you that it should be a part of your arsenal and you must do the rest. Most regrettably, there are a few poor souls out there who are genuinely unable to understand and develop Feel, but for the overwhelming majority of us, we are already in possession of all of the sensibilities and abilities required to learn to communicate with our work.

One might think that my occasional closing admonishment that everyone should go out and hack some metal has been idly tossed in as filler material. *Au contraire mon freres!* There is a method to this madness in that each time you put tool to metal, all of the results of the contact between the two - the sound, vibration, the amount of force applied, the size of the cut, the resultant finish, and everything else that takes place there, goes to your brain and is registered in your memory. As soon as it arrives there a little known natural enzyme (the secretion of which is thought to be triggered by eating sliced beets and pickled asparagus) that miraculously transforms this information into EXPERIENCE.

Now you are blessed with the option of being able to use your experience, thick or thin, to improve your projects, or not. Most of the master craftsmen that I know of usually elect to call upon their accumulated store of experience when building a project and of course it shows in their work. When marveling over an exhibition standard model however, we hackers must all be comforted by the remembrance that the knowledge and experience required to do exhibition calibre work was gained but one single cut at a time, and these same ladies and gentlemen rarely, except on the most basic of disciplines, gained perfect results on their first tries either. Oh yes, I admit that I could be entirely mistaken about the sliced beets and all. A pint of best local may do the same trick.

The first and most obvious part of this Feel business is of course visual; one simply watches the work as it takes place and learns to recognize what good results are supposed to look like. Observe what kind of chips are coming off the tool and what sort of surface finish is being produced. For instance, if the finished surface of a cut is dull or scruffy, the cutter or drill may be need sharpening or it may be incorrectly positioned. If that appears to be the problem, stop the cut and consult your texts or a friend for advice on making the appropriate adjustments.

A very good and commonly encountered example of this

technique in action would be as follows: you are cutting or drilling in mild steel and the tool is producing a long, curly chip that turns a deep purplish-blue shortly after coming off the tip of the cutter. This then is an indicator of two things, that *a*) your cutter or drill is indeed properly ground and set (the long chip tells you that), but *b*) the cutting speed is much too high. A blue chip from steel tells you that excessive friction is overheating the cut and the remedy is to slow the work down or reduce the cutter speed. To continue a cut under these conditions will usually result in a very poor finish and a burnt cutter tip or edge before the piece is finished. A bit of lubrication often helps this condition but should not be used to support overspeeding.

In drilling you should watch the drill go in and gauge its progress; it should go in slowly but easily. If all else sounds and appears to be right, yet the drill refuses to actually proceed into the work without undue force, something is amiss. Withdraw the drill and see what's wrong. Most times drilling problems are due to spindle speeds that are either too low or too high for the drill bit in use. Never force a machine of any kind, for something will have to give and this will invariably result in a ruined workpiece, machine, or machine part.

The next step is to develop your sense of touch so that the vibrations transmitted through the machine or tool to you are received and recognized as a message about how things are going. If you hear the hiss of a fine cut, and you feel little or no transmitted vibration, then all is probably well. If, on the other hand, there is an audible scrape or hum on the cut, this should be confirmed by the presence of peculiar vibrations known as chatter. The results of chatter are very visible and appear as patterns of ripples in an otherwise smooth finish. Mostly you will use your sense of touch to gauge whether the depth of your cut and the amount of metal being removed by the machine is excessive. This will be felt by you as the amount of resistance present in the feed handles as you move into the cut. On the drill press it is the amount of pressure required to poke the drill through and the guidelines mentioned in the previous paragraph will apply here as well.

"Feel" includes not only the development and use of our sense of sight and touch but also of our hearing. There is the old workshop phrase "putting on the cut", which for the most part applies to lathework, but means in general to engage the machine carriage or table feed and cut metal. When all is not right with the cut (usually traceable to a combination of improper speed and poorly ground cutter or drill), metal will make all manner of queer noises, and listening to the sound of the cut in progress will tell much about what is amiss. A lathe that is set up properly and is running right will often emit a hiss, not a hum or a sizzle, but a very recognizable hiss. This sound signifies that many little molecules of metal are taking gentle leave of their brethren, and visually the newly cut surface will be smooth and bright. Any sound that is like unto a grinding or scraping noise, or alternatively a hum, chatter, or squeal, should signal you that something is not running right and adjustments need to be made right away. Sometimes the problem is in the adjustment of the machine or in its structural

condition, in which case it may be inescapable. It is a fact of workshop life that Big machines take big cuts and Little machines take little cuts, therefore we must not ask or expect a machine to perform a task of a size or a quantity that it was never intended to do.

Eventually (and this should not take very long for the regular user) you will come to be familiar with the sounds made by your own machine (or other tools) when the cut is right. You will associate certain appearances, sounds, and vibrations with good results and be able to recognize that if that sound is not heard then something is wrong, or if not wrong then not exactly right. I must warn you that this ability to Feel is not to be considered foolproof, nor is it a cure-all for whatever is ailing your workshop results, but it will be the most important aid in improving the quality and consistency of your work that you can acquire. Alas, it cannot be bought, you will all have to come by it honestly, by working at it.

Dysfunction Junction

It does seem to me that whatever furor there has been about the true identity of this old Cranky person has for the most part subsided, for which I am thankful. I have, however, become aware that there continues to be an occasional call from some quarters to turn the rascal out (the odd grumble and grouse about my identity or lack thereof), and the commentary on the Steamup in my most recent article has served in certain circles to whip up yet another little tempest in a teapot. If it is any comfort to those of you out there who still lay awake at night pondering this conundrum, I have accepted that perhaps in the fullness of time, if I am to practice (and display) what I preach, inevitably all will be revealed. But until then, I would prefer to submit my humble contributions anonymously from the library and workshop of Crankpin Manor.

To those few of you who continue to be upset by this situation my question is, why in the world should it possibly matter? My intent is not necessarily to hide from view (although I do wish to remain a very private person), but to participate and help where I can. I choose to participate by employing a harmless literary tradition, the pen name, and to stumble along in the unfillable footsteps of several generations of writers in the model engineering press whose readers were concerned not so much for what they were called, but only for the usefulness and verity of what they wrote. Does not a Skunk by any other name well, I needn't continue as you surely know the rest of that little verse. Perhaps those few of you who continue to be upset by my insistence upon anonymity do not have enough to keep you busy? If that be the case, my inquisitive and impatient friends, leave your hats and coats hanging on the peg as we intend to put an end to that in future issues.



The Steamchest

by Marc Horovitz

The Slip Return Crank

We all know about slip eccentrics. You push the engine the way you want it to go and it goes that way until doomsday -- or until you push it in the other direction, whichever comes first. When you push the engine, the eccentrics that drive the valves slip on the axle until the valves are reset to propel the engine the other way.

But suppose you need that space between the frames for something else, like a fuel tank or a firebox? Or suppose you are modeling an engine that has Walschaerts valve gear, and you don't want to go to the trouble of making fully working gear, but you don't want to use slip eccentrics either?

One answer may be slip return cranks. The function is much the same way as slip eccentrics in that when an engine is pushed in one direction, its valves are automatically set so that it will continue in that direction.

The return crank (British), or eccentric crank (US), is attached to the crankpin on the main driver, and is the primary actuator of the valve gear. With Walschaerts gear, a small but important part of the motion is taken from the crosshead as well, but that needn't concern us just now. The size and position of the return crank (I'll call it that because the term seems to be in more common usage than eccentric crank) is designed so that the action of the valve is 90° out from that of the piston. It's small end will be at a set distance from one side or the other of the axle's centerline when the side rod is at bottom dead center. If, without moving the wheel, the small end of the crank is positioned at the same angle on the other side of the centerline, the locomotive would travel in the opposite direction. Herein lies the key to the slip return crank.

With a slip return crank, the crank is loose on the crankpin. It is prevented from excessive rotation by a pin on a drive collar on the crankpin, that engages little ears on the crank. (Or the drive collar may have two pins, and the crank one central ear. Like most things mechanical, there are often several ways of accomplishing the same task.) The drive collar must be fixed to the crankpin somehow so that it won't rotate. One way is to cut a keyway in the crankpin and provide the collar with a key, as per the drawing. Another way is to square up a tiny section of the crankpin and give the collar a square hole.

ADVANTAGES

As mentioned above, one advantage to the slip return crank is that it frees up space between the frames. Another is that they lend themselves well to modeling Walschaerts geared engines -- which have all the gear outside the frames. Slip eccentrics best represent Stephenson's gear, which is usually contained between the frames.

British locomotives often have their valves inside the frames, while the cylinders are outside. This makes access to the valves from the eccentrics a simple matter. But if the engine is American, the valves will most likely be outside the frames, astride the cylinders. If you are using slip eccentrics, you must figure a way to bring the motion outside. This is usually done with rocker-arm assemblies of some sort. Roundhouse Engineering uses unconventional horizontal ones, while Aster uses the more common vertical ones. If you use slip return cranks, though, the entire mechanism is outside, where it belongs on certain types of locomotives. The extra parts involved in bring-

ing the motion out of hiding are dispensed with.

When the slip-return-crank mechanism is assembled it is almost invisible. If you'd like to see one in action, take a look at the ubiquitous Aster *Schools* class 4-4-0. (Aster has claimed the invention of the slip return crank, but it can be found in British literature as far back as the 1930's.)

DISADVANTAGES

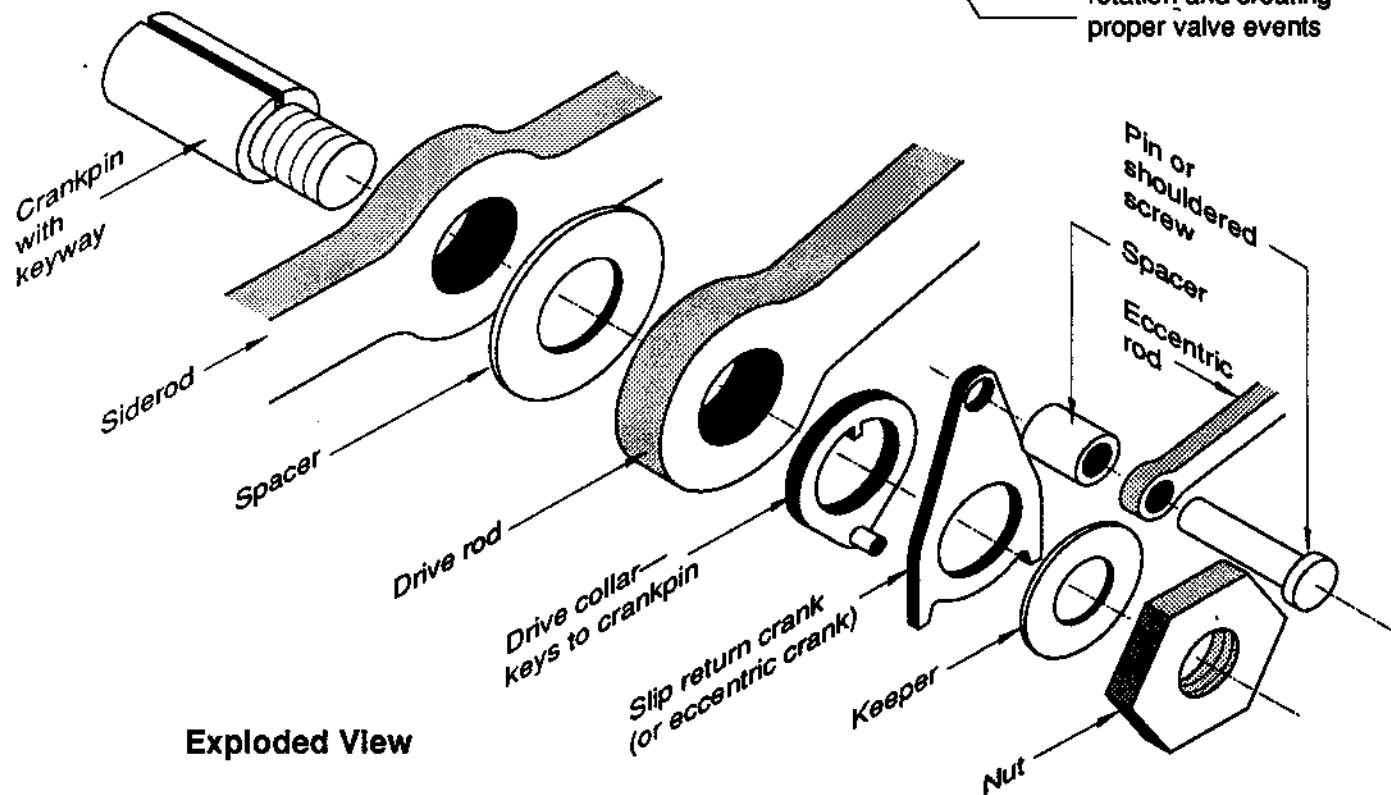
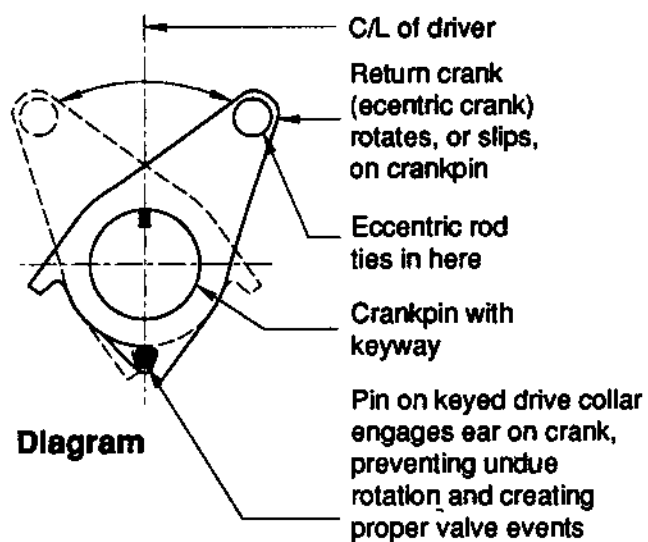
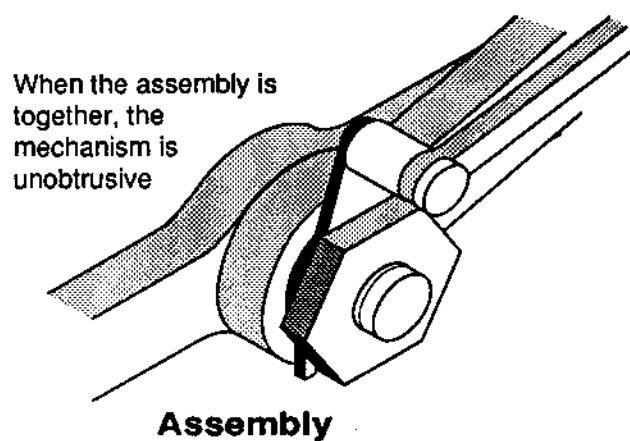
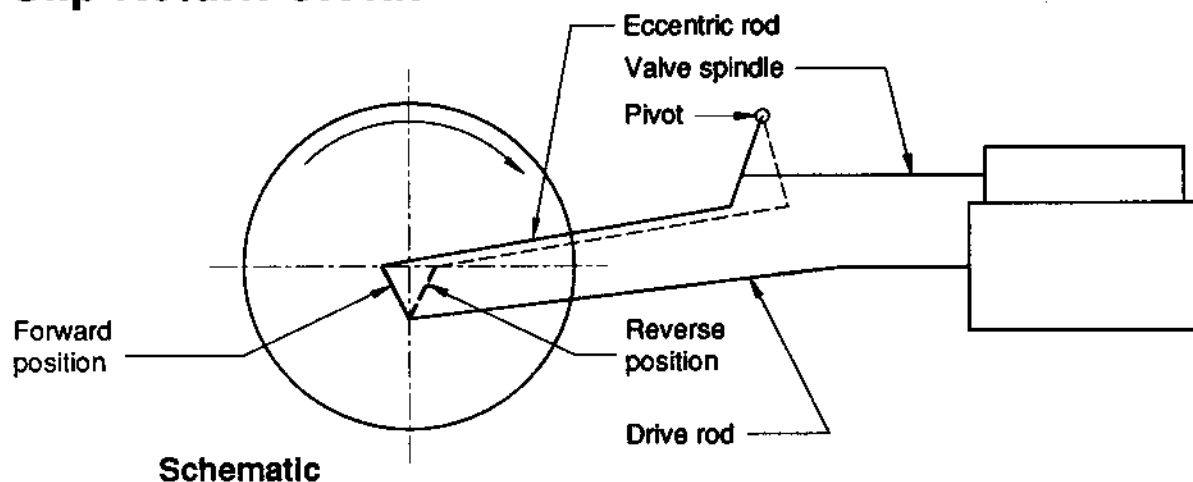
Probably the biggest disadvantage to the slip return crank is that its parts are smaller than those of the slip eccentric, and there are more of them, though fewer than with fully working Walschaerts gear. You must do your numbers very carefully and be very precise when making your parts, or the mechanism may not work properly.

As an aside, there is another interesting mechanism that combines features of both the slip eccentric and the slip return crank; the outside slip eccentric. A true slip eccentric is mounted on the main drivers of the engine, one on each side, exposed to view. Although it works well enough, this mechanism is both unsightly and unrailwaylike. The only commercial engines that I can think of that used it were those made by Beck of Germany back in the early 1980's.

So there it is. One more obscure path down which the study of model steam locomotives can take you. That's what makes this whole thing so fascinating to me -- there is never-ending variety in the different ways we contrive to combine the fire and water to produce forward motion.



Slip Return Crank



Gazing Into the Fire

by Peter Jones

Steam power in the garden needs better track than battery or two rail machinery; a fact that is well known and long established. So, from time to time, articles appear on how to lay absolutely flat track, with large radius curves and plenty of access. I am by no means innocent of such texts myself. I like to say that all gradients should be avoided and that curves should be of a very large radius. It is reasonable advice, based on proven experience.

However, as in so many things, I'm not sure that offering advice on how to be perfect helps all of the people, all of the time. The rough and tumble of the daily world isn't like that. We may fall short of nirvana for a variety of reasons. We still want steam in the garden, and there is no reason why we shouldn't have it.

Our railroad, with its faults and virtues, may already be in existence. It may still be in the planning stage and we are guessing that we may not be able to produce the perfect track. What is needed is advice on how to fiddle things to that steam locos will run.

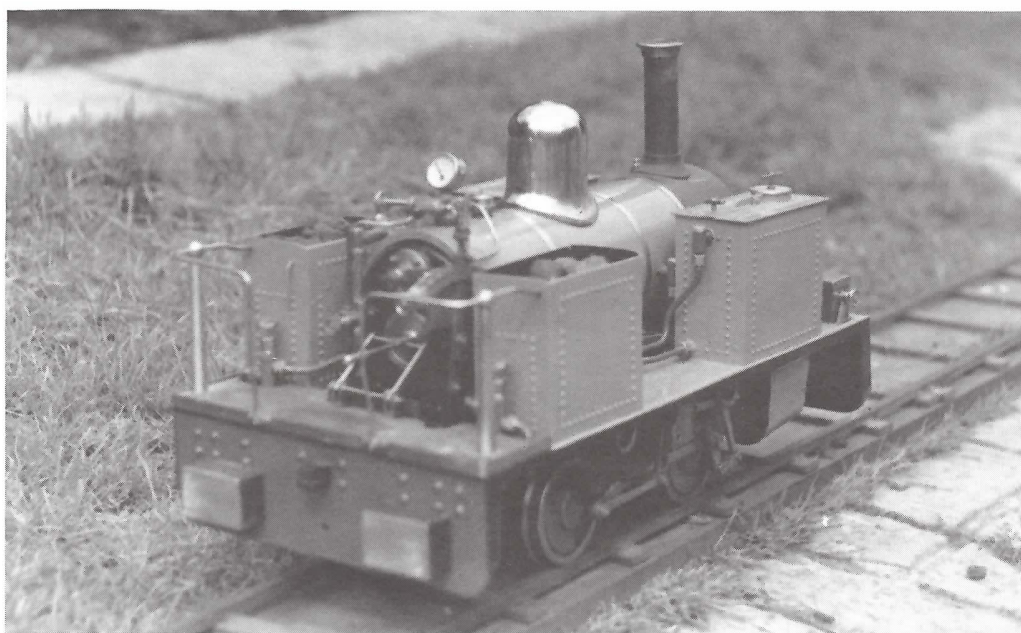
Before continuing, I must own up to a piece of blind prejudice. I believe that a steam engine should be capable of going around a track without the need for radio control. The radio should only be called on to adjust speeds and stop at certain places. If you need to use the radio to force the engine

up steep grades and to stop it from running away downhill, then something is wrong and needs fixing.

In the USA there is a tendency to put a railway in a portion of the garden and to give it sharp LGB curves and an intricate layout. Whatever your own personal view of this type of railway, it is not ideal for steam. Those sharp curves act as a real drag. Remember too that if a train climbs a grade and then levels out before going round a sharp bend, the engine may be on the level but the rest of the train is still climbing. If the throttle is open hard enough to climb the grade, it may run away going downhill.

This problem may be eased by varying the load. A light engine is easier to set at a constant speed than one which is dragging a dozen cars behind it. On the other hand, some steam locos don't like running slowly, light engine. The early, high pressure Archangel engines are skittish and willful. Reducing the spring in the safety valve a tad will reduce the blow off pressure and make the creature more amenable. I don't run long, heavy trains and, as a consequence, I like engines which blow off at around 35 lbs. - or even a bit less.

It has to be said, though, that a problem can be a challenge. When you first put an engine on the track and it seems uncontrollable, here is an opportunity to develop driving skills. Don't throw open the throttle on a Mamod and let it charge off.



DANTE, a 5" gauge beginner's engine designed by Peter Jones. This example was built by Gerry Tull. It's a freelance, wing tank engine based on TICH castings, but which has been simplified and "narrow gauged".

Photo by Gerry Tull

Hold the engine between your hands once it is on the track and has raised sufficient steam, and open the throttle with a finger. Let the engine gather pace in your hands, and then let it gently escape. Rejoice in becoming aware of boiler state and load. Don't just rely on an impersonal switch on a radio transmitter.

If your railroad has been laid out around a large area of the garden, with big curves, steam operation may well be easy. But if you have one of the rabbit warren layouts which steam engines don't like, don't feel that you have to start over again. I have got engines and items of rolling stock that don't like odd little spurs on my layout. This happened on the prototype. So they are banned. You may well be able to organize things so that you have a circuit of track that is level and has larger radius curves. Enjoy running your loco on this and be content. You are following full size practice. You are running steam engines in the garden. What more is there to life?

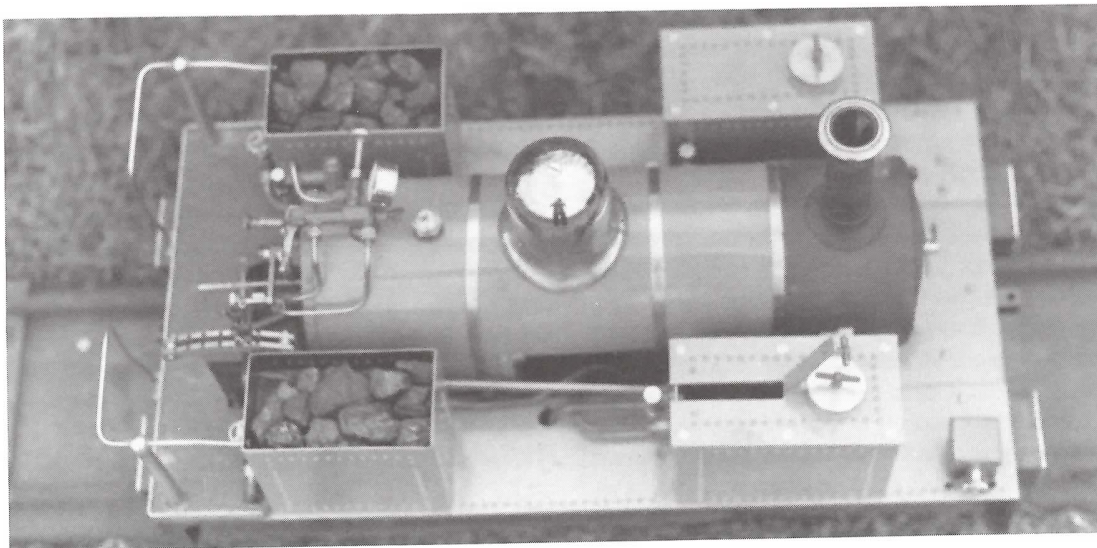
With a steely glint in the eye, I apologize to no one in my dislike of ground level railways. The only good thing about them is that they are easier to build initially. Yes....another of my mindless prejudices! Every inch you can go above ground level is treasure indeed. Moreover, it gets more valuable as the years progress and the waistline spreads. If you have got a ground level track, then the first thing to do is at least build an elevated steaming bay, where you can give your locos tender, loving care in comfort.

One useful device is to dig an operating pit near the main station. If you can't raise the track, lower the ground. The main obstacle is drainage. If your ground is flat, forget it. But if there is a slope on your estate, dig a trench and put in a land drain of stones, broken pottery, shells or whatever is to hand and cover it over. The pit can have some paving slabs in the bottom and a wooden seat to sit on. You could also erect a miniature station canopy behind and above so that you can steam up in all weathers.

All of this boils down to me suggesting that you can adapt an existing layout for steam operation, given enough thought. We still come back to the ambitions of large curves, flat-ish track and plenty of access.

Having said all this, I now want to go on and contradict myself. Realism comes in many disguises; subtle weathering, rivets by the ton and dimensions accurate to within an electron or two. But it can also be attained in layout design. An oval of track which consisted of straight sections followed by set curves lacks realism. Narrow gauge railways in particular are very prone to wandering gently across the landscape. There may not be too much straight track. That basic oval can be made to look better if the straights aren't straight. Put in a couple of higher portions of ground that force the track to bend and turn a little.

There is now one more step that you may care to take if you have enough confidence. Having been brought up with people screaming "keep it flat" in your ear, you could go on to deliberately break this rule. To get away from the billiard table look, start putting in one or two gentle humps and hollows. The secret is to balance them out. If you have a piece of straight track, let it dip in the middle. The train gathers speed going down and slows up when climbing a short grade. Combine this with gentle meandering curves and you start to plug into a new kind of realism. Needless to say, it needs to be done with restraint and thought when you are using free-running live steam, but it does give you an extra dimension of realism; something that oozes with the atmosphere of backwater railroading. As in everything else connected with garden railways, it is a happy mixture of the aesthetic and the mechanical.



The DANTE project works equally well in 3-1/2" gauge or 7-1/2"/7-1/4" gauges. It will go around very sharp curves and is quite compact for the power it produces. It would also make for a pretty little Gauge 1 or Gauge 0 model.

Photo by Gerry Tull

Loco Review: Steamlines "Little Giant"

by Rich Finlayson

Technical Specifications:

Scale - 1:16 (3/4" = 1')

Gauge - 45mm (gauge 1)

Length - 8.75"

Width - 3.75"

Height - 6.75"

Weight - 2.65 kg (5.8 lbs.)

Minimum radius - 60 cm (24")

Chassis - is machined from one piece of HE30 aluminum. Cab is made from 1.2mm thick high tensile steel. 1.25" dia. aluminum wheels w/insulated steel tires, 1/4" steel axles run in brass bearing blocks.

Boiler - 2" dia. x 6" length, silver soldered, double stayed, all copper construction, internally gas fired with butane gas, twin safety valves, working pressure 40 psi, pressure tested to 150 psi, steam outlet from turret to prevent priming - comes w/oversized 150 psi pressure gauge as standard equipment.

Cylinders - two double-acting cylinders w/piston valves, O-rings on pistons.

Bore & Stroke - 13mm bore x 16mm stroke (.51" x .63")

Lubrication - displacement lubricator.

Duration of run - see text

Control - manual cab regulator linked to rotary speed/direction control valve.

Available Colors - Black boiler, smokebox & cab roof - maroon or green superstructure, red buffer beams, side tanks lined silver.

Options - Available as factory built & RTR or in kit form. Smaller 3/4" pressure gauge & syphon, Goodall valve for adding water while under steam, radio control & whistle are all available as options.

Price - \$895.95 factory built & RTR, \$599.95 in kit form.

Available from: In North America - Diamond Enterprises, Box 537, Dept. SG, Alexandria Bay, NY 13607 - phone 613-475-1771. All others contact Steamlines in the U.K. direct.

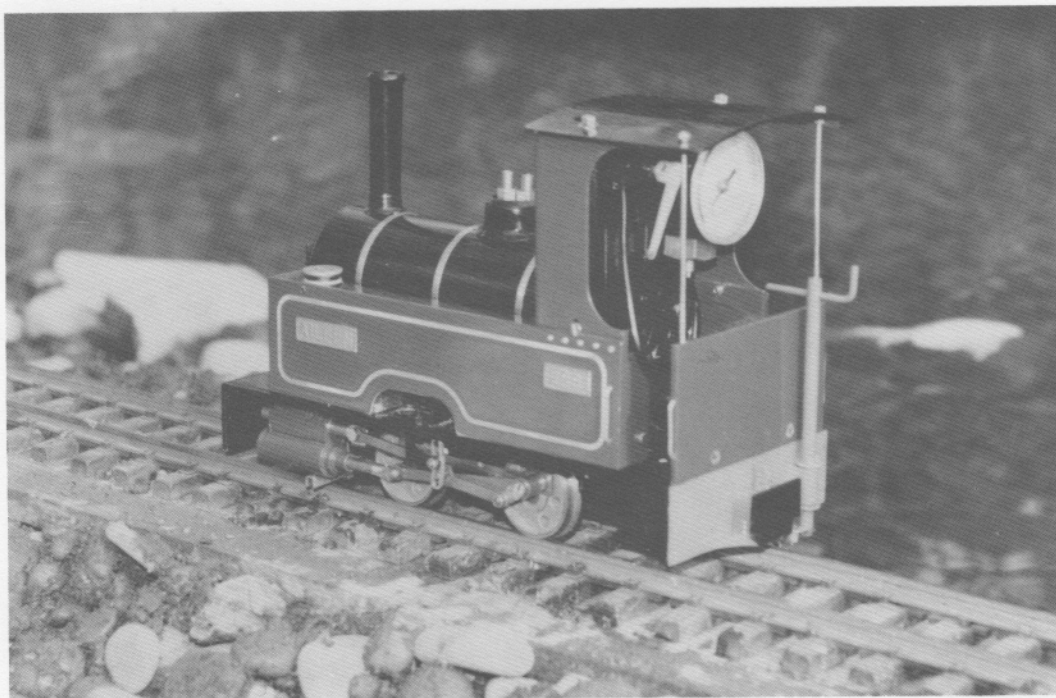
Steamlines, a loco builder in the United Kingdom, now offers "Little Giant", a 3/4" scale locomotive from which a full line of locomotives is promised. The first incarnation, AILEEN, is modeled after an Andrew Barclay 0-4-0 full cab design, and has appealing proportions and detail. Little Giant was first advertised as an oscillator driven locomotive, but around the first of the year I talked with Tom Cooper of Steamlines and he recommended that I wait for the first batch of locomotives driven by double-acting piston valved cylinders.

The wait was worth it, and AILEEN arrived with the entire chassis already assembled, which was quite a surprise as I was expecting a box of parts. It turns out that Tom assembled the first batch of locomotives himself in order to gain familiarity with the experience that a builder will have during general construction and setting of the valves. Future batches of the kit version will adhere more closely to the definition of a kit, and Steamlines will also continue to offer a ready to run version. Diamond Publishing will be the exclusive distributor of Little Giant locomotives in the US & Canada and have announced

pricing of \$895.95 for the ready to run version and \$599.95 for the kit.

Very few components make up the chassis and boiler assembly because the entire frame is machined from a solid block of aluminum. The solid frame is a sight to behold and the cylinder blocks, valve block and running gear are easily and precisely aligned in the all-in-one frame. Other than those four main components, the burner and running gear are all that will require a little attention. Because I received a built-up chassis there was no need to set the timing. I would expect that this task will be easily accomplished, judging from the detail and thoroughness of the instructions that came with the kit. Axles are quartered to ensure even timing.

The body, or superstructure, is another unique aspect of AILEEN. As with the frame, the side tanks are machined out of solid blocks of aluminum, leaving a well proportioned raised line around the edge of the tanks. The instructions recommend that the paint be buffed away to reveal a thin silver line. Alternatively, a dexterous hand would be able to easily pick out



This photo angle gives us a good look at AILEEN'S cylinders, motion and outside drivers. The lever at the right rear of the cab is the throttle/direction lever. Also clearly visible is the oversized pressure gauge (see text).

Photo by Eddie Bellass - courtesy Steamlines

the lining in a complementary color.

The cab structure, stack, dome, smokebox door and cab back are all cleanly machined from aluminum (*there may have been some changes made since Richard received his loco, as the factory specifications now list the cab as being made from steel - ed.*). They are easily fixed to the chassis with screws or epoxy. Like the chassis, all components are substantial and rugged. For ease of construction, all the tiny bits are attached in small bags to a sheet that identifies what they are and where they should be used.

The instructions suggest that the loco be painted after it is constructed and steaming well. Also that the driver block should be removed and the cylinder rod, valve rod and filler valve should be masked. I found that it is also best to remove the butane tank, pressure gauge and reversing lever. Then the instructions recommend that the assembled chassis be painted and left to dry. I am a little reluctant to try this method, but will give it a shot to see how it works. Those with more time may want to break the components back down before painting, but the timing will have to be reset.

The next steps involve painting the side tanks and the remaining cab and detail components. Steamlines recommends a supplier by the name of Cherry Paints, but this will be of little use to customers outside the U.K. It is recommended that "car paints" be avoided, but I don't know why because I've had great success with them. Make sure that all boiler fittings and openings are plugged before paint is applied.

It seems to me that piston valves tend to be maligned more

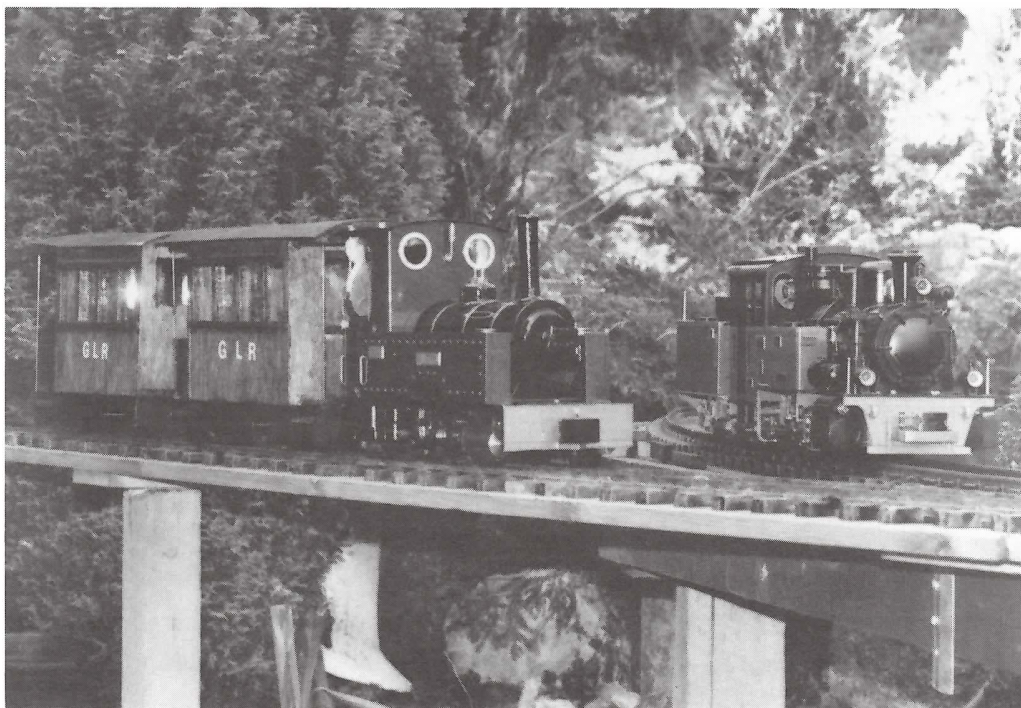
than they deserve. It is true that they wear out, as opposed to in as on slide valves, but AILEEN'S cylinders leave nothing to complain about and do their work as reliably as the piston valve cylinders that LGB (Aster) used on the Frank S.

The cylinders are made by Wilesco to Steamlines' specifications and are very substantial. Smooth, even starts were experienced every time after initial priming, and the first run had me chasing AILEEN down the tracks. I had intentionally under-filled the boiler to prevent priming and to raise steam quickly, and AILEEN took off at the first crack of the valve.

Little locos pulled little trains, and in AILEEN'S case I added piles of rocks to my LGB wagons in order to provide a load so that I could open the regulator up. The burner can be turned down to a low hiss and will still generate a normal head of steam. A nice bonus is the very pleasing and audible exhaust beat.

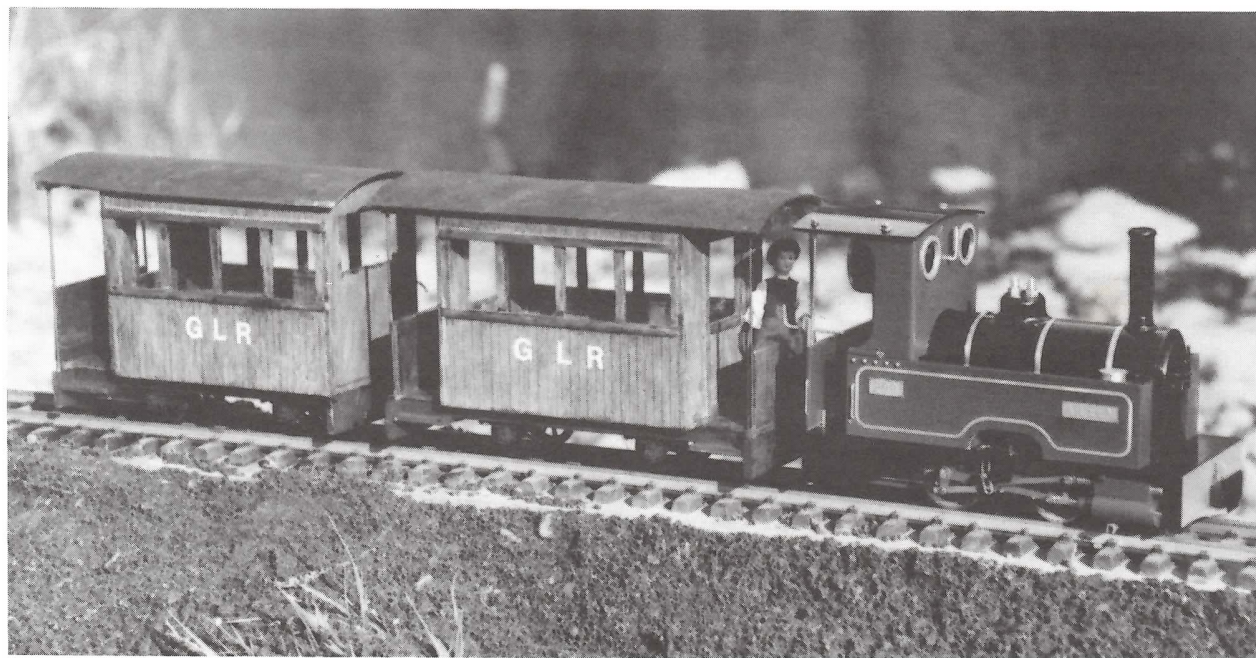
AILEEN is controlled by rotating what looks like a slightly oversized brake standard. Center is the neutral (or stop) position, forward and reverse are had by rotating the brake handle to the right or to the left. Forty-five degrees is wide open, but the loco is quite controllable within that range. AILEEN also exhibits good slow-running characteristics with plenty of power as she crawls around the Yank & Bank Shortline with different consists.

There are only a few things out of the ordinary that might get your attention. AILEEN is 1:16 scale. 1:19 scale (16mm) steamers from the UK are able to fit in with 1:22.5 structures and rolling stock in the garden, but AILEEN looks like a swan



With throttle wide open and passengers praying for a miracle, AILEEN races an LGB Frank S. toward sure disaster at the switch! Well, okay.....they're really both stopped and posing for a photo opportunity. This shot shows AILEEN'S eye-pleasing proportions as well as relative size compared to a 1:22.5 scale locomotive.

Photo by Eddie Bellass - courtesy Steamlines



AILEEN rolls past a scenic lake somewhere in Wales, a pair of Great Little Railways coaches in tow. They seem to be running light - no doubt on the way to a charming little village with too many L's, F's or D's in it's name to pick up a load of tourists.

Photo by Eddie Bellass - courtesy Steamlines

in a chicken coop. She's good looking, but most 1:22.5 or 1:19 rolling stock will look out of place coupled up to her, as is easily shown by placing a 1:22.5 figure in the cab. Steamlines promises 1:16 scale rolling stock in the future, along with track, pointwork and a whole 1:16 scale railroad system.

I don't particularly like the buffers that are an integral part of the milled frame. I would prefer to have separate buffers that mount on a flat front frame. Incidentally, the hook from LGB compatible couplers will mate perfectly with a hole in the bottom of the frame just under AILEEN'S buffers.

Be warned that the stock locomotive comes with a 1-5/8" steam pressure gauge that is monstrosously unattractive. A more petite and appropriately sized 3/4" gauge is available for an additional £15.00, and I recommend spending the extra money.

The smokebox detail is attractive, but it's fixed to the front of the boiler tube with epoxy. I would prefer to have it bolted or screwed on so that it could be more easily removed. Finally, the simulated expansion link that gives the "Walschaerts look" doesn't behave very prototypically - but it gives a nice effect when in motion.

These detractions will pale for anyone watching their wallet - or for the scratch builder. A saw, file and Dremel tool could easily transform AILEEN into whatever ideas are knocking around in your head. Different buffers (couplers) could easily

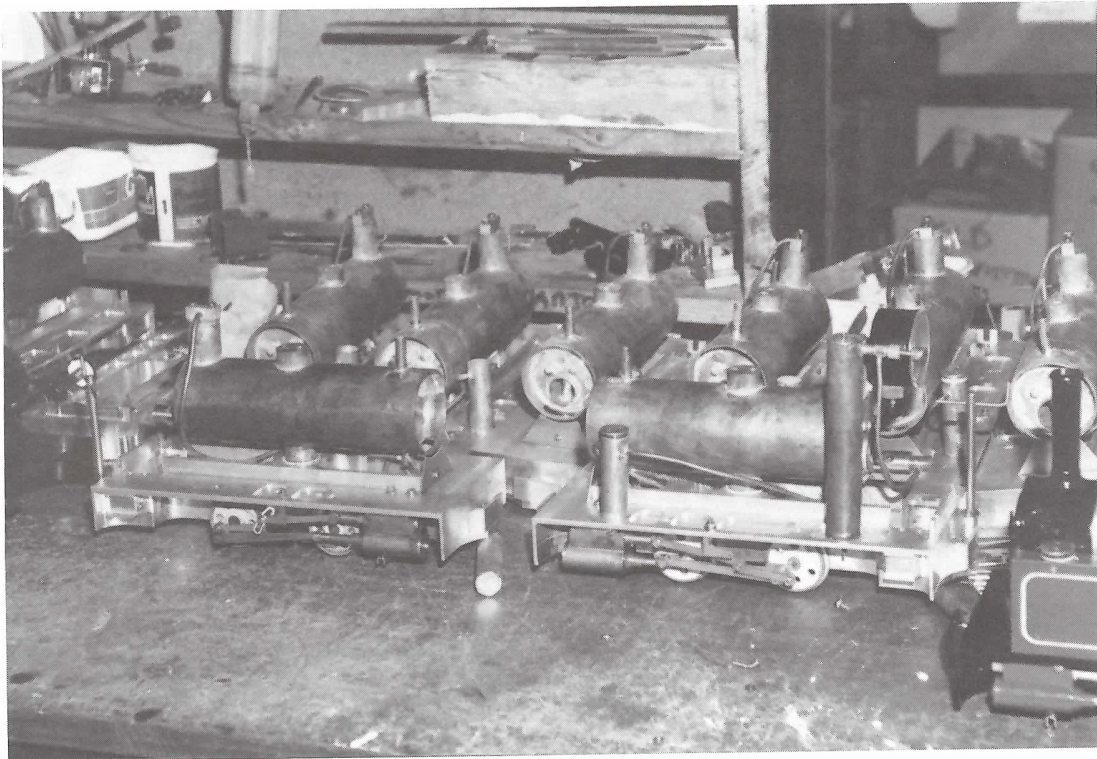
be fitted and the chassis begs for creative hands to build all sorts of cab enclosures that could be proportioned to blend in with existing rolling stock, structures, figures, etc. - after all, it doesn't have to be 1:16 scale if you don't want it to be!

The height is probably the dimension that will strike you first, but Steamlines is planning an open cab version (with a different gas tank shape) that would go a long way toward helping AILEEN blend in.....or providing a better base from which to build a downsized superstructure.

The smokebox design would easily allow a rebuild of the front end for a more American-style profile, and the outside drivers should strongly appeal to American narrow gaugers. Incidentally, I spoke with Tom Cooper at Steamlines and he is willing to knock £40 off the kit price for those of you who would be interested in a chassis-only kit for your kitbashing project.

R/C could easily be added, and while Steamlines doesn't offer any advice or hardware for the task, it wouldn't take much creativity to mount a servo to control the throttle/reverser. A little experimentation on my part showed that the receiver and batteries could most likely be located under and/or in the cab. I am recently rediscovering the charm of manually controlling my locomotives, and AILEEN'S accessible controls and smooth performance are a strength in that department.

If I'm enthusiastic about AILEEN it is because she far



A whole workbench filled with **Little Giant** locomotives in various stages of completion. Just peeking into the picture at the right is a completed, painted locomotive.

Photo courtesy Steamlines

exceeds any expectation I had for her when the order was placed. She's solid and durable. Should anything go wrong, the components are easily isolated for repair or maintenance. The burner is quiet and well matched to the boiler. The side tank lining is an attractive extra, as are the general proportions and detail of the rest of the locomotive. The outside drivers are a welcome change of pace for those of us that have been bashing British 16mm equipment to make it look a little more American, and the performance of this locomotive will meet every requirement for smooth running, slow speeds and even starts from a dead stop. The only unknowns are how well the cylinders will hold up over time, and just how easy it will be to build a kit

chassis that will run as smoothly as the assembled chassis that I received from Steamlines.

I'd say that Steamlines has a winner on their hands with an impressive locomotive at an attractive price. Steamlines has taken advantage of some unique manufacturing techniques to deliver a product that should have broad appeal.



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Calendar of Events

July 5-11 - 9th National Garden Railway Convention, Santa Clara, California. Large indoor dual-gauge (gauge 0 & gauge 1) steaming track. Contact David Gill at 1777 Hamilton Ave., Suite 106, San Jose, CA 95125 or phone 408-371-7472 for more information.

June 19-20 - Gauge 1 steamup at Marty Maloy's in Wayne, New Jersey. Large, elevated railway with dual-track mainline in scenic setting - large radius curves for big ASTER engines. Phone 201-696-3747 to RSVP and for more information and directions.

August 28 - 5th Annual Steamup and Open House on Ron & Marie Brown's Silo Falls Scenic Railway in Newark Valley, New York. Ground level gauge 1 garden railway - hope to have some gauge 0 trackage operating in time for steamup. Send a SASE to P.O. Box 335, Newark Valley, NY 13811 for more info, or phone 607-642-8119.

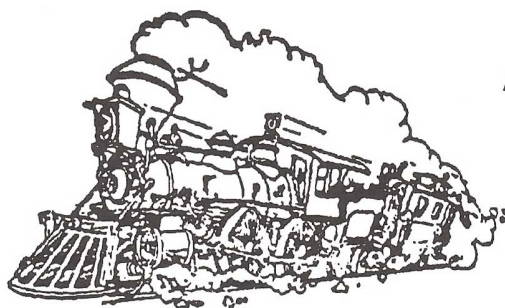
September 17-19 - Indiana Transportation Small-Scale Steamup. Two 380 foot gauge one loops, two 380 foot standard gauge/gauge one/gauge 0 triple gauge loops. Contact John W. Bloxdorf, M.D., 2540 North Ninth St., Terre Haute, IN 47804 for more information. This could be another very important meet for live steam enthusiasts, on the order of the Diamondhead, Mississippi meet last January.....don't miss it!

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 (ie. ground level or elevated, minimum curve radius, ruling grade, etc.).

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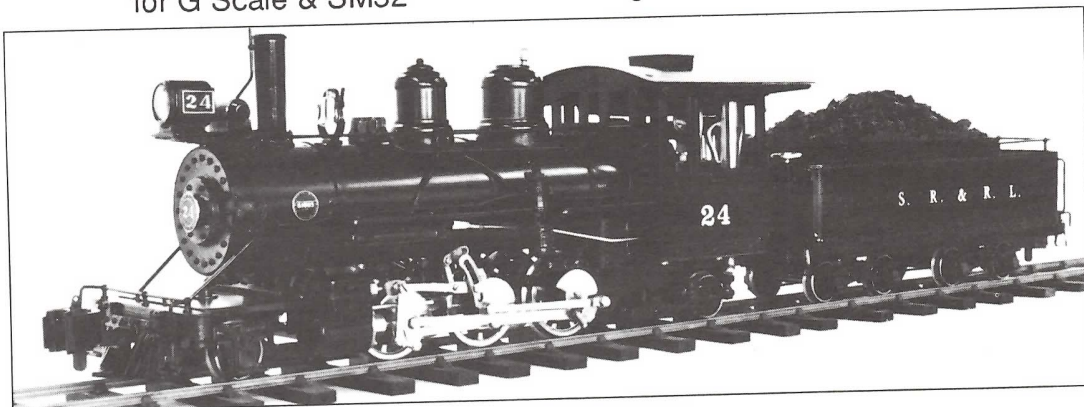
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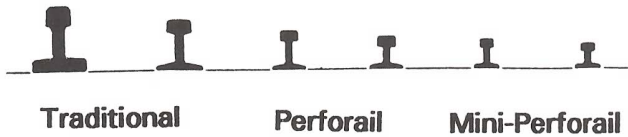
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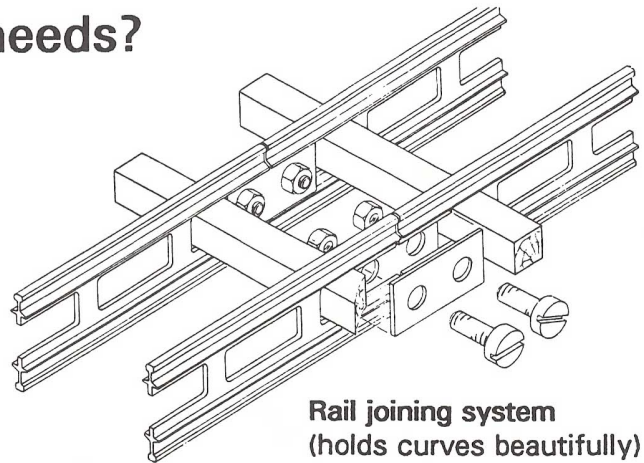
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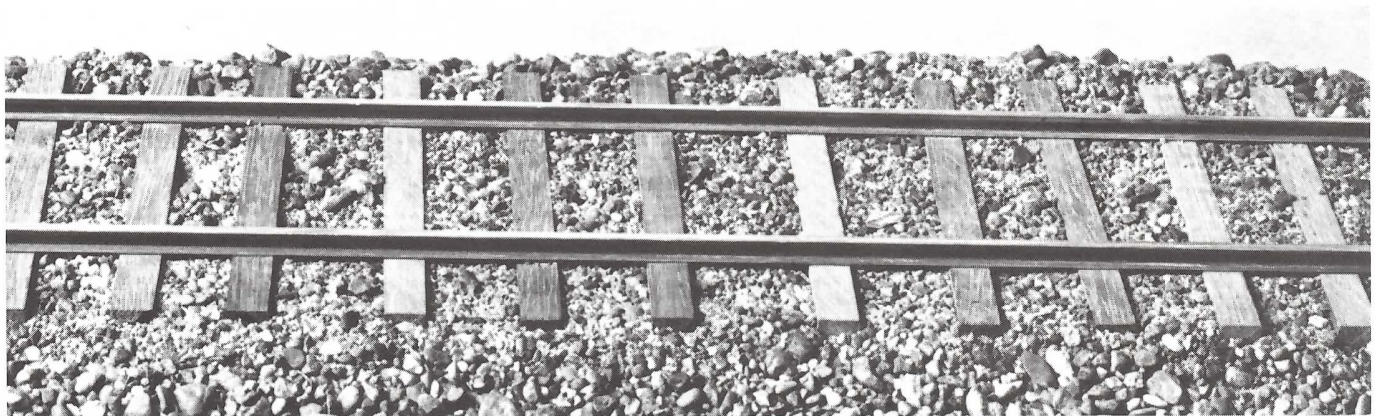


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The Dollar-Sixty Five Loco

by Rob Kuhlman

Regular readers of SitG may recall an article in the June/July 1992 issue entitled "The Dollar Model Revisited". In that submission I attempted to highlight the concept of minimal live steam as manifest in a whimsical, semi-competent live steam tram engine which I bolted and soldered together from scrap metal, a Mamod stationary engine, MSR drivers and so forth, with a grand total investment of around \$100. The Dollar Model is doing fine; a graphited wool piston ring (unraveled from an old sock) has finally settled in, and a displacement lubricator has not only helped to reduce compression leaks but has also contributed to a spectacular display of exhaust.

At the 1992 National Garden Railway Convention in Reston, Virginia, Samuel Muncy's Railway Garden Ltd. display contained numerous delectable treats. Nestled in one corner of his table was a little red box containing a Saito OB-1/OE-1 marine application boiler and oscillating cylinder steam engine. Now, this was a real competent oscillator - complete with ready-to-run compression! Furthermore, it came with its own displacement lubricator. Samuel gave me a really fine price; and as I drove back north up Interstate 95, the plans for the "Son of Dollar Model" were laid.

Now, it's not my intention to provide a step-by-step construction article; Peter Jones' Garden Railway Guides #2 (battery locos) and #4 (the Dacre project) provide not only detailed construction procedures useful for almost any locomotive project, but also the emotional encouragement and support that I needed back when I scribed my first line in steel with a dart tip guided by a Lego T-square. I can't recommend these booklets enough.

That said, let's get on with it! Basic construction methods and materials were similar to the original Dollar Model; 1/16" steel from an old derelict circuit box was hacksawed and filed into 1" wide by 7" long strips for the frame rails, and 3-1/2" long for the end beams. Three more pieces of steel were shaped for deck plates upon which to mount the oscillator, the boiler and the cab. Brass angle and 2-56 nuts and bolts were used to hold everything together. A transverse, rather than longitudinal, orientation was chosen for the boiler to provide a compact design. The oscillator was located in the stern, the cab in the

bow -- a transverse boilered cab forward! Perhaps if the Southern Pacific had gotten into mineral tram railways.....

Power transmission from the oscillator uses two 1/8" diameter steel rod (Northwest Short Lines) countershafts with Serv-O-Link delrin sprockets and chain. The second countershaft turns the drivers with Chicago Gear Works brass sprockets and ladder chain. The final gear ratio of 23:1 enables the engine to circuit my railroad at a leisurely backwoods pace. Once again I used Miniature Steam Railways' gorgeous Mamod-replacement spoked drivers. By the way, if you choose to build something along these lines, be sure to ask Jim Wilson of MSR to leave one wheel off its axle so you can press the chain sprocket on first. Otherwise, it's a mighty nasty squeeze to get that sprocket pressed up and over the mounted driver!

The cab was soldered up out of camp stove fuel can tinplate; the beading which was soldered on the edges of the tinplate cab is de-insulated copper hookup wire. The engine driver is a Bachman figure with a 2-56 bolt epoxied into his foot. The steel end beams have pieces of 1/4" x 1/2" stripwood bolted to them, and couplings are homemade links & pins made from brass box section silver soldered to a brass strip, which in turn is bolted to the steel frame.

The boiler is fired by a vaporizing alcohol burner. Startup this winter has been stubborn (ie., lots of matches). Once the burner heats up, however, it burns quite willingly. The boiler shroud retains heat splendidly and ensures that the chassis stays reasonably cool.

The end product is, once again, pure whimsy, but the fun is largely in the design and construction. The total investment was around \$165, so perhaps this tram engine can be named the "Dollar-Sixty five Model". As one who is intrigued by minimalist live steam, I'd encourage readers who feel led to try their hand at this sort of thing to send photos of their efforts to SitG; perhaps our editor can be convinced to run a special "Rogues Gallery" section of The Steam Scene from time to time.



Loco Review: Roundhouse JACK

by Matthew Labine

Technical Specifications:

Scale - 16mm (1:19), fits in nicely with "G" scale

Gauge - 32mm or 45mm, gauge adjustable

Length - 11.5"

Width - 4.75"

Height - 6.0"

Weight - NA

Boiler - butane gas fired, center flue, silver soldered copper, fitted with throttle valve, pressure gauge and safety valve set to 40psi

Cylinders - two double acting with slide valves

Bore & Stroke - 9/16" bore x 5/8" stroke

Valve Gear - typical Roundhouse modified Walschaerts

Lubrication - displacement lubricator in cab

Duration of run - Factory rated at approximately 25 minutes (see text)

Control - available with manual control or R/C control installed

Couplers - center buffer with hook

Color - black boiler & frame, red buffer beams, cab & saddle tank available in black, green or maroon

Price - \$975 manual control, \$1139 fitted with R/C (plus shipping)

Available from - all Roundhouse dealers - review loco was purchased from West Lawn Loco Works

Jack is a free-lance design said to be typical of those used on many narrow gauge railroads. It's a very attractive loco, with nice, chunky proportions. It has well-done rivet detailing, in addition to dummy sand boxes with sand lines running down inside the frame and linkages that look deceptively functional.

My model was well-assembled. The frame is square and true. The paint and finish is flawless. The boiler jacket beneath the saddle tank, normally invisible, is also painted and finished; a very classy touch.

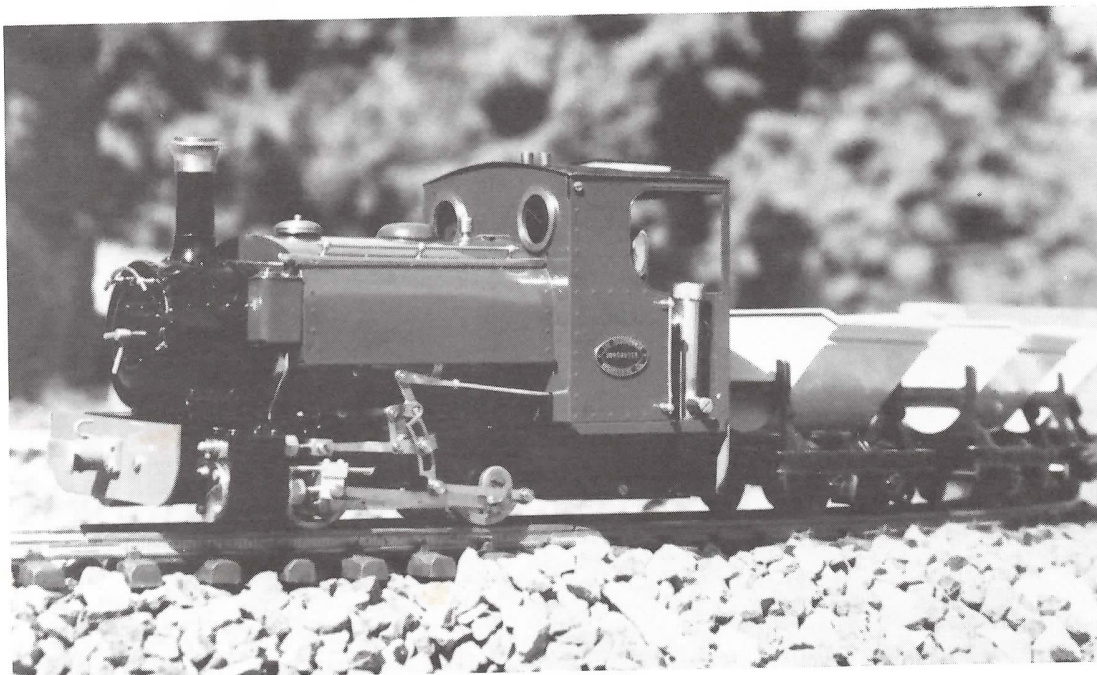
It's obvious that JACK was designed with operation in mind. The roof is hinged, giving access to a well laid-out cab. Everything is accessible, even to my none-too-delicate fingers. The fittings with which one fiddles in the course of normal operations—safety valve, lubricator cap and drain screw—are designed to be finger-tightened and -loosened. No more forgetting to pack a critical tool when going off to a steam-up!

My loco came with radio control, a two-channel Futaba Attack-Sport unit. The battery switch on the loco is unobtrusively mounted on the frame below the right-hand side of the cab. The stick controlling the semi-Walschaerts valve gear is sprung, which allows for a sort of dead man's switch effect. Release the stick, and both it and the valve gear return to center/neutral, and the loco comes to an immediate halt. Another nice touch is that, although both throttle and reverser are controlled by servos, you

can still work them manually if need be, so a fine afternoon's run needn't be ruined by dead batteries or radio interference.

Lest the cynical reader think this is a total puff piece, I do have a couple of minor complaints about JACK, both about the bodywork. The cab walls seem to be of near-scale thinness, which make for an attractive model. But the saddletank and cab is one piece, attached only by a single screw atop the tank. There's a small but unnerving amount of flex in the cab, which might have been cured with a couple of sheet-metal screws to pin down the corners. I fear that one day I'll forget myself, pick up the loco with one big hand over the cab and inflict some serious squashing damage.

The second complaint: the batteries (4 x AA) are stored in the left-hand side of the saddle tank, meaning you have to remove the body every time the batteries go pffft. The directions say the body lifts straight up. Uh-uh. It needed some twisting, delicate maneuvering, and some flexing of the cab walls to work it around various obstacles, most notably the lubricator drain, while trying to avoid scratching the paint on the frame up front, where those lovely brass sand lines were suddenly acting like scrapers. Removing the drain screw helps somewhat, but one's sense of urgency only increases as watery oil starts to ooze out of the lubricator and onto the kitchen table. This might only be a problem for ham-handed owners of R/C



The Roundhouse JACK, doing what steam locomotives are supposed to do - haul the freight. According to the author, the LGB tipper wagons presented no challenge to this fine locomotive - even when they were filled with rocks! Note the displacement lubricator in cab doorway.

Photo by Matthew Labine

equipped models, but here I am...I suppose that the best solution would be to install a Nicad battery pack and a charging jack somewhere and avoid the problem altogether. Until then, I'll just have to be very, very careful.

I was interested in JACK because of Roundhouse's reputation for building reliable, smooth-running locomotives. Even though I was expecting it to be a good runner, I was stunned by its fine performance. The weather on test day was cold and damp—not ideal conditions for either the loco or me. The dealer told me that he'd run JACK several times before I'd bought it. Knowing that it had been broken in to an extent, I felt fairly confident in testing the limits of its performance. The fueling/lubing/filling/oiling ritual was uneventful. I lit the burner by applying fire at the top of the stack while opening the gas valve and left JACK burbling in the family room while I carried my rolling stock out to the railway.

Steam pressure hit 35 psi in about eight minutes. JACK was perched on the rails and the R/C was turned on. I threw the gear into forward and cracked the throttle. A small bit of oily water (condensate) came out the stack, and then JACK began to creep forward. I ran the loco light for a few minutes to check out the controls. The R/C gives very fine speed control. JACK will smoothly make the transition from dead stop to slow crawl without having to goose the throttle, and when the throttle is closed it will drift realistically to a stop.

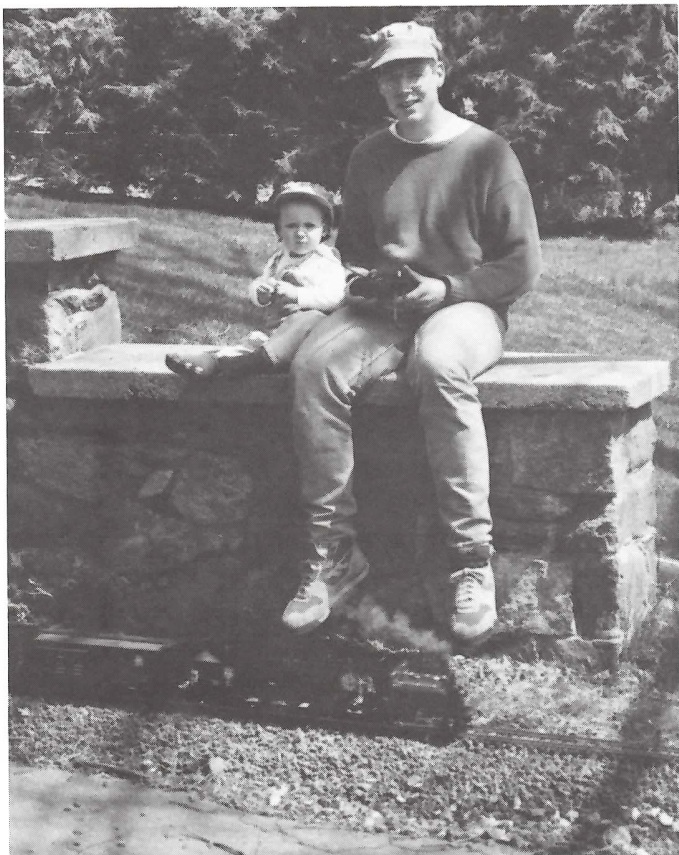
Speed at full throttle wasn't unreasonably high, but I

wanted to test JACK, not the reliability of my trackwork. The thought of JACK derailing on Deadman's Curve, tipping over, and rolling down the embankment was more than I could bear, so I kept to the posted speed limit.

Some folks have said they dislike Roundhouse's gas burners because they're too noisy. I found that even in the cold, I got adequate supplies of steam with the burner turned way down; the stack noise was quite audible and the individual valve events were visible in the exhaust. I could tell that a pleasant run was in store.

Already thrilled with what I'd seen, I gave JACK 16 axles of LGB stock to haul. Away it went without a care, cruising through my LGB #1500 radius curves at less than half-throttle. Wow, I thought, and added ten more axles to the train. JACK handled it without hesitation, and without my needing to turn up the burner. I went inside to get more rolling stock... JACK was able to pull all the stock I own (48 axles), needing the throttle opened just beyond half to get the train through the turns.

It handled the heaviest loads a little better in forward than reverse, but I suspected that it hadn't really been run in reverse and needed more breaking in. (Subsequent testing has proved me right). I lightened the load when JACK had been running for thirty minutes, figuring the run was just about over. JACK continued to trundle merrily along as I kept an eye on the timer. 35 minutes...38 minutes...JACK's steaming became a little



The author and his young son, Michael, contemplating future steam empires in the garden.....

Photo by Catharine Labine

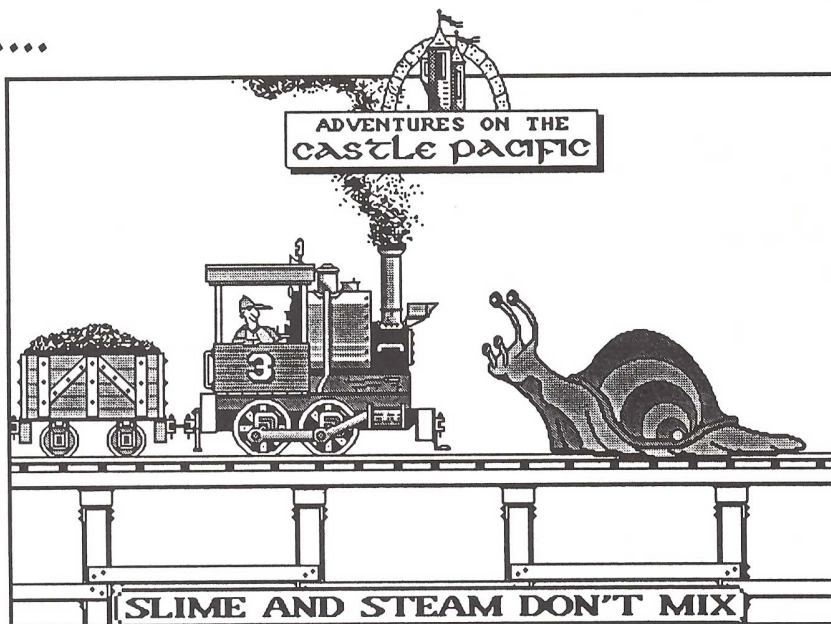
anemic; I began to worry about the boiler running dry. At forty minutes of running (and almost forty nine minutes since the burner was lit), I decided to shut it down...just as the fuel ran out.

Examining JACK after it had cooled down, I found that there was still oil in the lubricator and 9 ml of water left in the boiler. Given that a boiler filled according to directions holds something around 215 ml, this seems like an adequate safety margin. Even so, I think I'll try to keep runs under thirty five minutes, just for my own peace of mind.

The bottom line? JACK is well-designed, well-built, and a joy to operate. I think that this could be the beginning of a beautiful friendship...

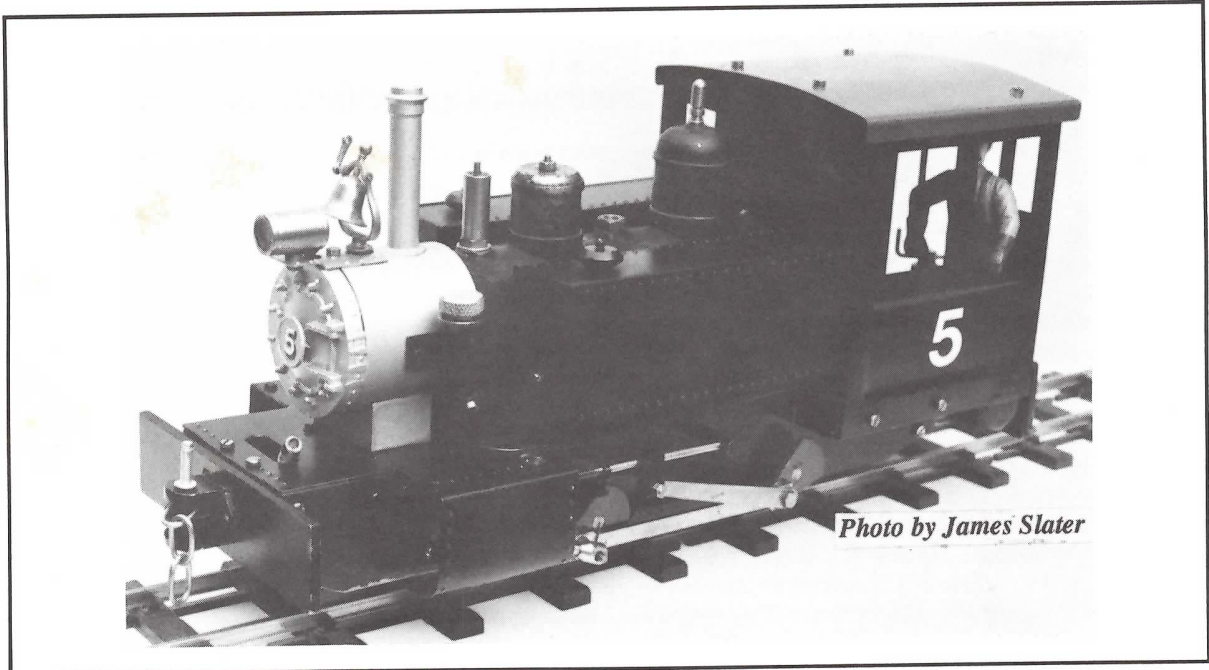


Rick Drescher's.....



Rick Drescher © 1993

SALEM STEAM MODELS



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Our Porter loco has been specifically designed for U.S. customers and is not just a simple conversion from a Welsh narrow gauge engine! It has full rivet detail, sharply embossed in the correct U.S. pattern, steam and sand domes, Porter-style smokebox door, side tanks and cab. It is finished in a semi-matte black with red oxide cab roof and gray smokebox.

Dimensions (approx.): 12" long, 5 1/4" high and 4 1/8" wide. Weight is 6 lbs. plus.

Illustrations are for guidance only, actual models may vary in detail.

Salem Steam Models also supply a large range of accessories for the Mamod loco, including burners, lubricator, regulator, safety valves, spare parts, bodywork conversions with rivet detail, stacks, a tender (for gauge 0 only) and much more. Send two \$1.00 bills (or a \$2.00 bill) for details and prices.

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A Useful Workshop Appliance

by Harry Wade

Build Your Own Tapping Stand

During the past few months I have had several lengthy conversations with Ron Brown on the subject of machine tools and the needs for outfitting a basic workshop for the steam model builder. As a follow up to one of these conversations, I sent a photograph of my workshop to Ron with a brief description of the equipment in view. One tool in the photo that caught his interest as being out of the ordinary was a Tapping Stand which I had designed and built for myself several years ago. After a more detailed description of the construction and a few more photographs were sent along, Ron asked if I would consider writing an article describing the tapper project as he felt it would be of some interest to the general readership. I agreed to do this so here we go.

I first became interested in making a tapping stand after reading an article on the construction of a Universal Staking and Tapping tool described by George Thomas in *Model Engineer* magazine some years ago. This article, along with a good machinist friend of mine, suggested that, among other things, using a tapping stand would go a long way towards reducing the occurrence of broken taps; a frustrating accident which is always expensive in both time and money. For a long time the tapper project was not considered to be a very high priority and I made no start on one until one day when I irretrievably broke off not one, but two #5-40 hss taps in a nearly finished cylinder casting for a 1 1/2" scale locomotive. How those broken taps were finally extracted is a whole story itself, but needless to say, the tapper instantly became Priority One!

Mr. Thomas's version is very versatile and was designed to do a number of other jobs, such as riveting and peening, in addition to basic tapping. My own version has only two primary purposes as far as I am concerned (although there are no doubt more) and those are: a) to allow me to start a tap squarely and run it straight in its hole, which should subsequently b) substantially reduce the occurrence of broken taps. I also wanted the design and construction of the Tapper to meet several other requirements as nearly as possible. These were that I wanted to be able to build it in my own workshop of materials that I already had on hand or that could be had relatively cheaply, and that it have a very clean appearance and accurate operation. I also felt that it would be prudent and useful to make the Tapper large enough to accept almost any work that live steam projects of up to 1 1/2" scale would bring its way without making it too large.

I'll start with the base, which is made from a piece of 1" thick hot rolled steel plate which I picked out of a scrap bin some years ago. After determining the size and shape, I drew a full size template on drafting paper and a helpful local shop foreman flame-cut the base to size with an oxy-acetylene tracer torch. The rough edges of the base blank were then milled and filed to final shape, and one face was selected as the working surface and the mill scale finish was skimmed off with a fly-cutter in the milling machine. This base is admittedly much heavier than it needs to be and a piece of 3/8" plate would do the same job very adequately, but as I said, I wanted to use what I had on hand or what I could scrounge and this has made for a very heavy and stable base.

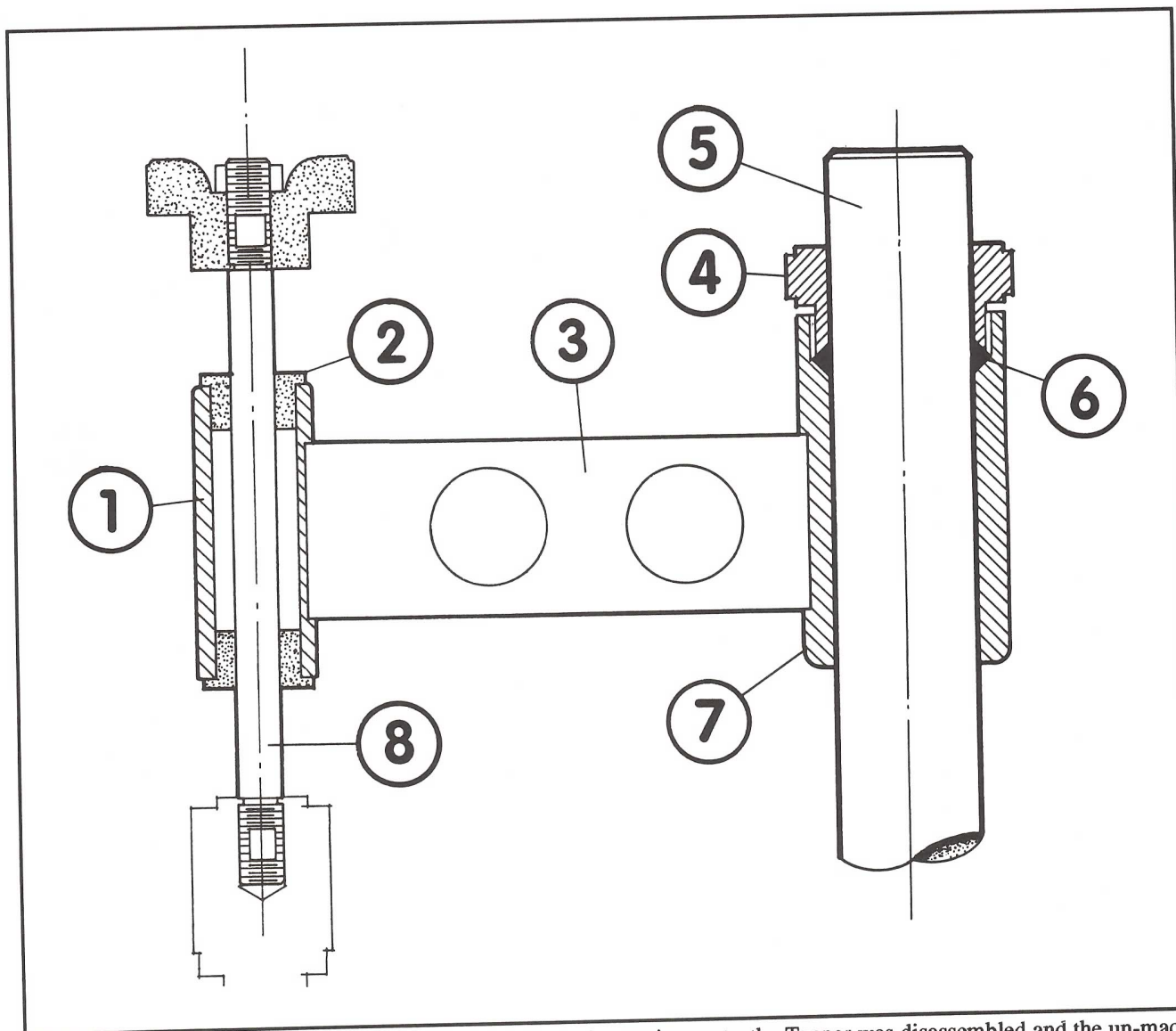
After a final fine cut on the working face with the flycutter, the base was turned over and clamped to the milling machine table working face down and the hole for the vertical column was drilled

out and bored to 1" diameter. This procedure was used so that when it was pressed in, the column and the working face of the table would be dead square with each other. While over on its face, I drilled and tapped for a 1/4"-28 screw at each outside corner. After final assembly and painting, I used these holes to install four rubber feet to give the base a bit of a resilient cushion and to prevent the Tapper from "walking" across the workbench while in use. This detail has worked out very well as the Tapper stays put on the workbench no matter how hard it is worked.

The Column (5) is made from a 16" piece of 1 3/8" diameter hot rolled steel bar (also picked from a scrap bin) which was finished between centers in the lathe to 1.2500". Actually, the column was first turned to about 1.251" with every effort being made to achieve the finest possible surface finish on the final cut with the lathe tool. I then applied a continuous film of fine abrasive grinding compound and with a 4" length of copper tube split and used as a sleeve lap, I hand-lapped the bar to precisely 1.2500" over its entire length. This was a lot of work and took quite a few hours on the lathe but resulted in a shaft that was dead straight, round, and parallel. For my particular design this was very important, as I will explain, and the results equalled what I could have gotten had I taken the job to a commercial grinding shop. To finish the column, I turned a 7/8" long shoulder to a light press fit in the 1" bored hole in the base, the column was then pressed home in the bore, and the basic structure of the Tapper was complete. The 16" column allows over 8" of clearance under the chuck, which is quite enough for most work in any scale.

The Tapper head is built up from three separate pieces of cold finished steel which were turned, bored, and milled to shape. The front or spindle tube (1) is a piece of 3/4" bar bored straight through in the lathe. Two Delrin (plastic) bushings (2) were turned and reamed through 3/8" diameter to suit the spindle shaft (8), and pressed into the ends of the front tube. The back or column tube (7) is a length of 1-3/4" round bar bored through to exactly 1.2505". The upper end of the column tube is counterbored and threaded to receive a knurled locking ring (4) and Delrin compression sleeve (6). The locking ring was turned up from a piece of 2" diameter steel bar. Both tubes have a shallow 1/4" wide slot milled along one side which serves as a receiver for the ends of the crossbar (3), which is a length of 1/4" x 1 1/2" steel bar stock with the ends milled square. The joining surfaces of the tubes and cross bar were thoroughly tinned with common soft solder, then clamped together so that the tube bores were square and parallel in all directions, and the whole assembly was heated until the solder flowed. I did have to reheat twice in order to make minute adjustments before I got the tubes truly parallel. The distance from the column to the tap center line is about 5" and is likewise enough clearance to take work in most any scale.

Soft solder might seem like an unlikely choice for a job such as this, but the intense heat required to silver solder or weld up this assembly would certainly cause warping or deformation that would destroy the .0005" tolerances in the back tube. Of course in most cases the final machining of a component is done after it has been welded or brazed, and normalized (stress relieving). The relatively low heat of soft soldering won't do any damage except to possibly



discolor the metal a bit. In addition to that, soft solder joints in steel can be extremely strong, especially when the mating surfaces are properly prepared (tinned), and when the solder joint is not subjected to temperatures over 180° F. In this project these parameters would be met, and since no part of the Tapper is subjected to a great amount of stress, I expected no problems and have had none.

The Tapping Spindle (3) consists of the shaft, made from a 7" length of 3/8" drill rod, a good drill chuck and a serrated plastic handwheel. The handwheel is a commercial control knob picked up for less than \$1, along with the rubber feet, in a surplus electronics warehouse. At about 2" diameter, it fits the hand well but provides barely enough leverage to turn the larger taps in hard metals. This is not a drawback however, because it actually provides just the right amount of leverage and control for tapping 1/4" and smaller, which is where 99% of my work is done anyway. The Jacobs drill chuck is a Model 31BA which comes tapped 3/8"-24 for threaded mounting and will hold up to 3/8" diameter tap bodies. This was the most expensive component that I used and was found on sale for less than \$25 about four years ago. I threaded both ends of the spindle shaft in the lathe so the threads would be straight and concentric. The spindle was finished off by milling a little flat in the threads on both ends to provide a seating place for #8-32 set screws which were added to both the handwheel and the chuck.

After final assembly and a little well-oiled use to break in the

mating parts, the Tapper was disassembled and the un-machined external surfaces were thoroughly cleaned and given a coat of good automotive primer. This was followed by two coats of machine tool enamel, the first of which was allowed to dry thoroughly and rubbed out before applying the final coat. The Clamping Ring was heated until black and then plunged into a can of filthy old motor oil which gave it a rich black oxide finish that looked superb against the gloss gray enamel finish. All other machine surfaces were left bright and are given an occasional rub with a light oil.

To use the Tapping Stand, the tap is held in the chuck and run in to the work very much like a drill bit. The Locking Ring is loosened and the Tapping Head can be moved up or down on the column as required, and the Ring is tightened again. By taking a great deal of care to make the column and sleeve to a tolerance of .0005" overall, there is no perceptible play or slack between the two, yet the Tapper Head will move freely to any location on the column and fully lock into place with only a 5 degree turn of the Locking Ring. Although it took a lot of extra work, I am very pleased with the way this locking ring detail turned out and I must admit that it has exceeded my expectations.

I did not keep a record of how much time was spent on this project because the job took place over a fairly long period of time. However, I would guess that I spent no more than 50 hours on the project, much of which was spent on working to close tolerances and

on special detailing and finishes. A much simplified and utilitarian version of this tool could probably be put together in several evening's work and perform the same job. Although I probably spent no more than \$40 in actual material outlay, it is important to point out that my ability to anticipate material needs and make use of scrap material contributed a lot to the economy of this project, especially in the case of the 1" steel plate.

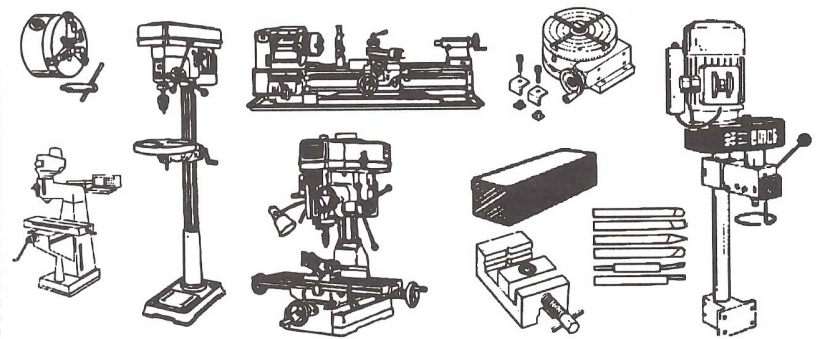
As for its value to the workshop, I can only say that in the two years or so that it has been in use, I have only broken one tap, a #0-80, and that because the cat decided to climb up my pants leg just as I started to cut a thread. Add to this the comfort of knowing that my threaded holes are now as close to square as is possible with hand tapping, and I consider this project to be time and money very well spent.

About the author: Harry W. Wade, a licensed architect by profession, is a long time live steam hobbyist and is the owner of The Willow Works in Nashville, Tennessee.

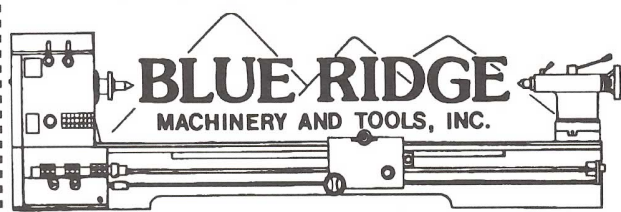


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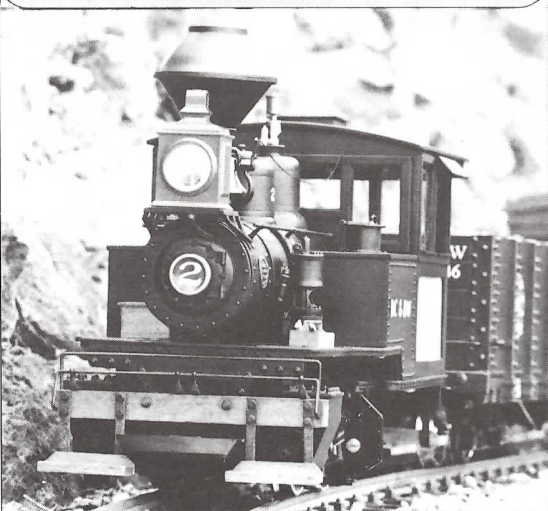
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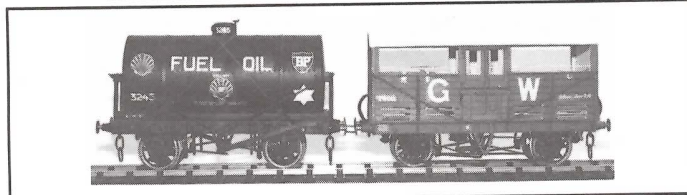
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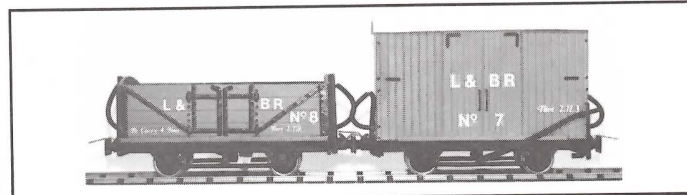
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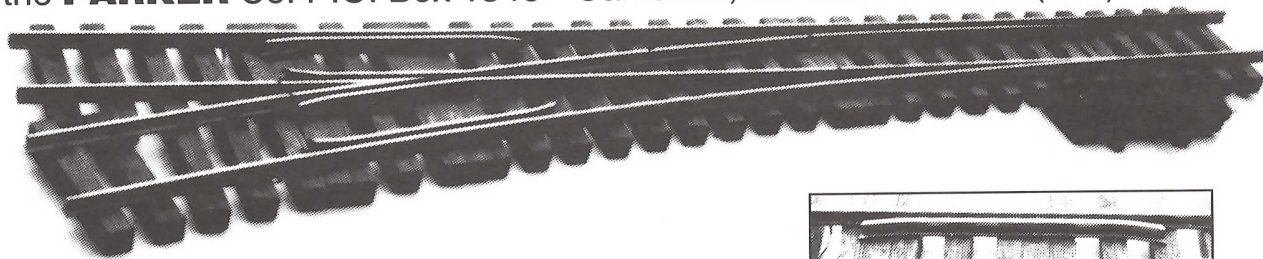
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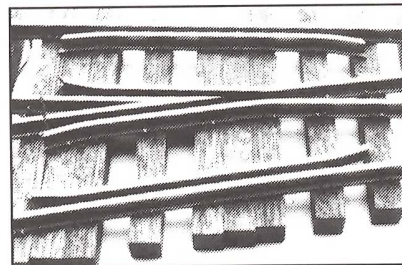
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Improving Drill Press Adapter Stands

by Murray Wilson

A Poor Man's Drill Press

There are two basic defects in the typical drill press stand that is sold to adapt a 1/4" or 3/8" electric pistol drill into a drill press. One is that the sliding mechanism that lowers the drill onto the workpiece is so sloppy that the drill goes out of square the moment it starts to bear down. The other is that the stand is made to accept all models of drills, with the result that none of them fit properly.

The accompanying sketch shows how these defects may be at least greatly improved upon, and probably cured.

The slop is taken up simply by holding the mechanism permanently in the loaded position. Two strong coil springs connected by a light chain do the trick. The springs sold for the cushion supports of redwood garden chairs are ideal.

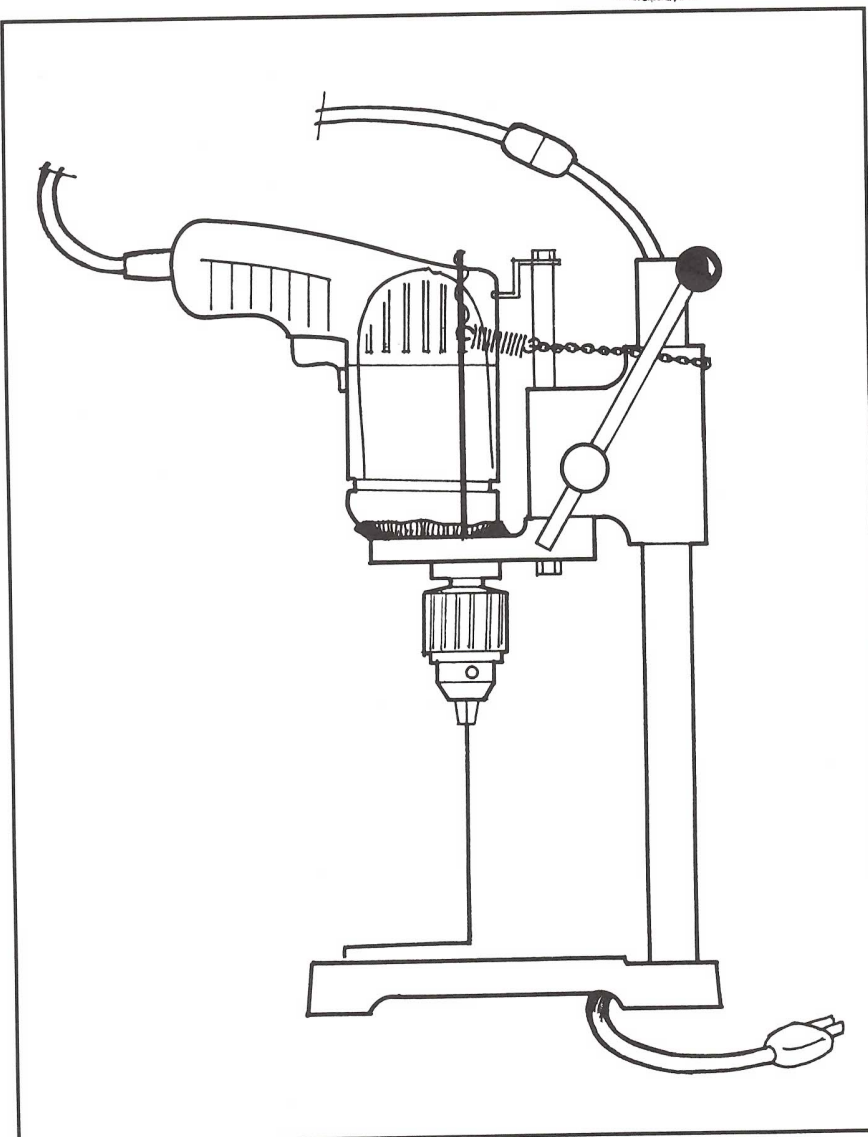
A screw prevents the chain from slipping upwards, and the two springs are connected by a wire wound in a lazy helix around and over the top of the drill retaining U-bolt.

A pistol drill should be selected, and probably dedicated, for use in the stand. It may as well be a fixed speed drill controlled remotely, because it is not convenient to use trigger control. It is going to be bedded into epoxy paste as shown in the sketch, so the casing should be lightly oiled where it will contact the epoxy. The epoxy bed is prepared and then the drill installed and aligned exactly perpendicular to the base working surface. The epoxy is then molded around the drill casing so that the drill is positively located, but still removeable. The epoxy is then left alone and allowed to cure.

The electric cord can usually be led down the center of the vertical column,

which keeps it safely out of the way of the tool and workpiece. If no dial indicator is available, a simple way of checking whether the drill chuck is perpendicular to the base is to bend a piece of stiff wire as shown. As the chuck is turned by hand

(do not run it under power!) the clearance between the base and the tip of the wire can be checked and the alignment corrected if necessary.



The Wickham Light Railway

by Bob Winkett
all photos by the author

Welcome to the Wickham Light Railway, a 16mm Narrow Gauge line in England.

Having been involved with HO scale models for about six years, and reading all the model railroading magazines here in the U.K., the articles by Peter Jones, Dave Pinniger and others really got to me. And when I saw a second-hand Mamod, that was it.

The first section of rail, approximately 24 yards, was laid in a corner of our garden, which was then landscaped with various low growing plants.

We are fortunate to have a very good plant centre nearby, who stock a wide range of alpine plants, dwarf trees, etc.

After six months it was decided to

extend the line. As our ground is liable to movement, all track is laid on 12" slabs of concrete with wide mesh incorporated into it.

The top layer has hardwood blocks let into it, to which the Peco SM32 track is lightly fixed to allow for expansion. After two winters it all seems to be holding up just fine.

The buildings are all cast in home-made moulds from a mix of 1 part cement to 3 parts sharp sand. The windows are plastic doll house parts, and the roofing is mostly 1mm marine ply tiles glued onto a false ply roof.

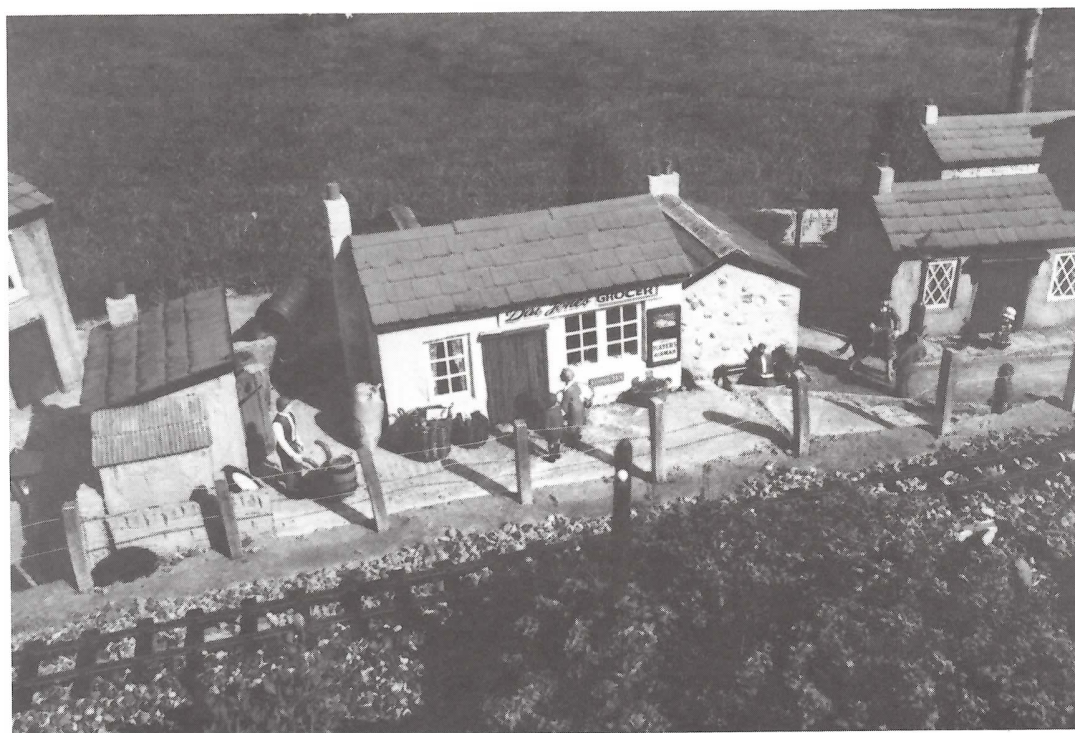
The corrugated roof on the lean-to shed next to the grocery store started out as a baked bean tin.

The photos show the wide range of buildings that can be made using this method.

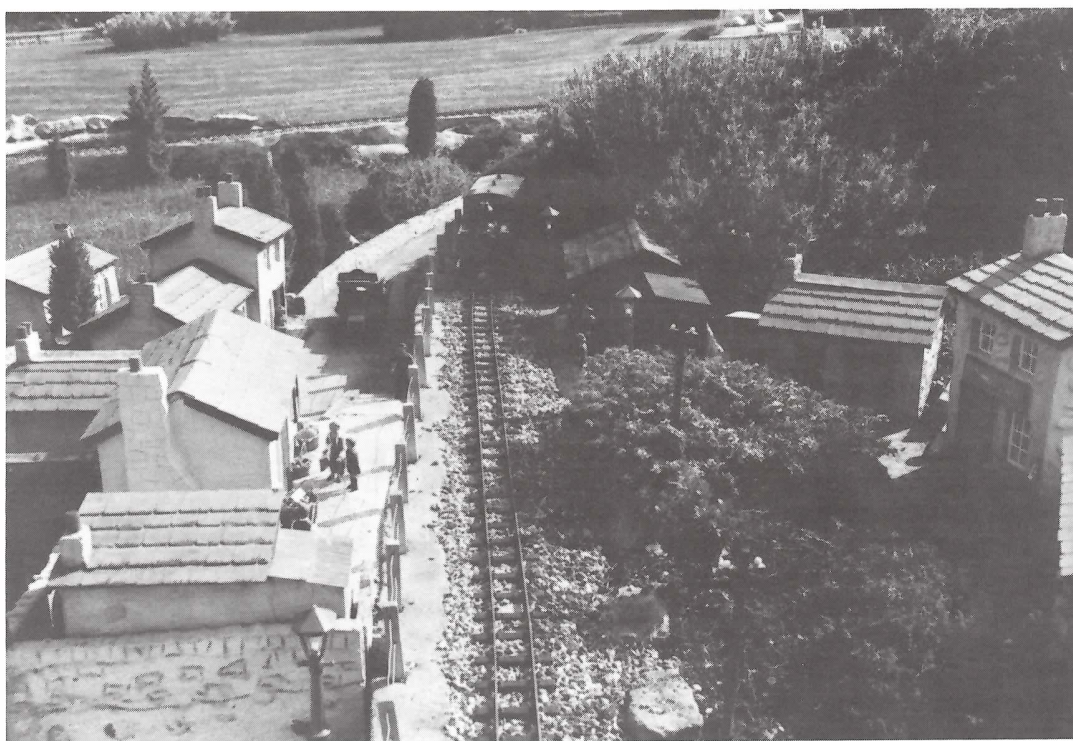
Most of the little people are made from "Star Wars" plastic figures, which can be bought at car boot sales (yard sales or garage sales in the USA) for next to nothing.

The last photo shows our live steam loco, a Maxwell Hemmens OGWEN, pulling up the grade and about to cross Lyn Bridge, with the village of TALIBONT visible in the background.

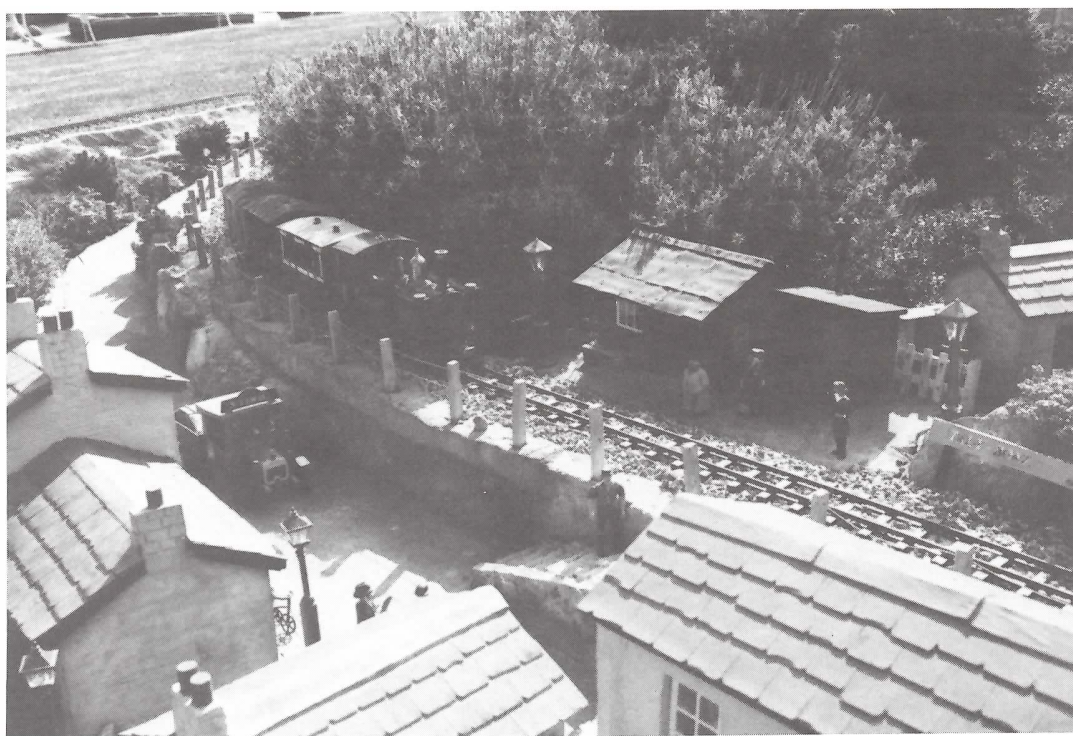
We hope that the saga of the Wickham Light Railway is of interest to SitG readers, and we will continue the story in upcoming issues.



Lots of activity on this little village street on a warm summer afternoon. Notice how much realism is achieved with the addition of simple, inexpensive details. The fence separating the street from the tracks is a nice touch, all too often overlooked.. Signs on the walls of the cast concrete buildings (see text) and curtains at the windows really bring the scene to life.



The afternoon passenger service drifts around the bend and into the village of TALI-BONT. The townspeople are so used to the sounds of hissing steam and steel wheels on steel rails that many of them don't even look up from their tasks as the driver reduces throttle and applies the brakes, preparing to make a perfectly aligned stop at the station platform.



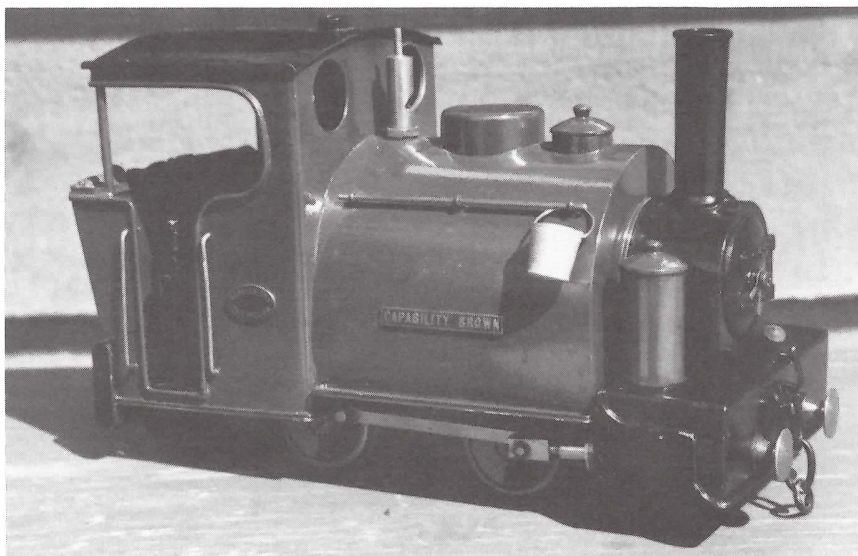
Those few townspeople waiting on the platform with ticket in hand are much more interested in the train's arrival. They are anxious to get aboard and get underway.....with the possible exception of the serviceman locked in an embrace with his sweetheart, that is. It may be a very long time before they meet on this platform again.



OGWEN, a small live steam loco designed by Roger Marsh and now being built by Maxwell Hemmens, hauls a short freight train up the grade and across Lyn Bridge. The driver seems to be looking at his watch, which shows him to be running on time as he approaches the intersection near the small, but prosperous village of TALI-BONT.

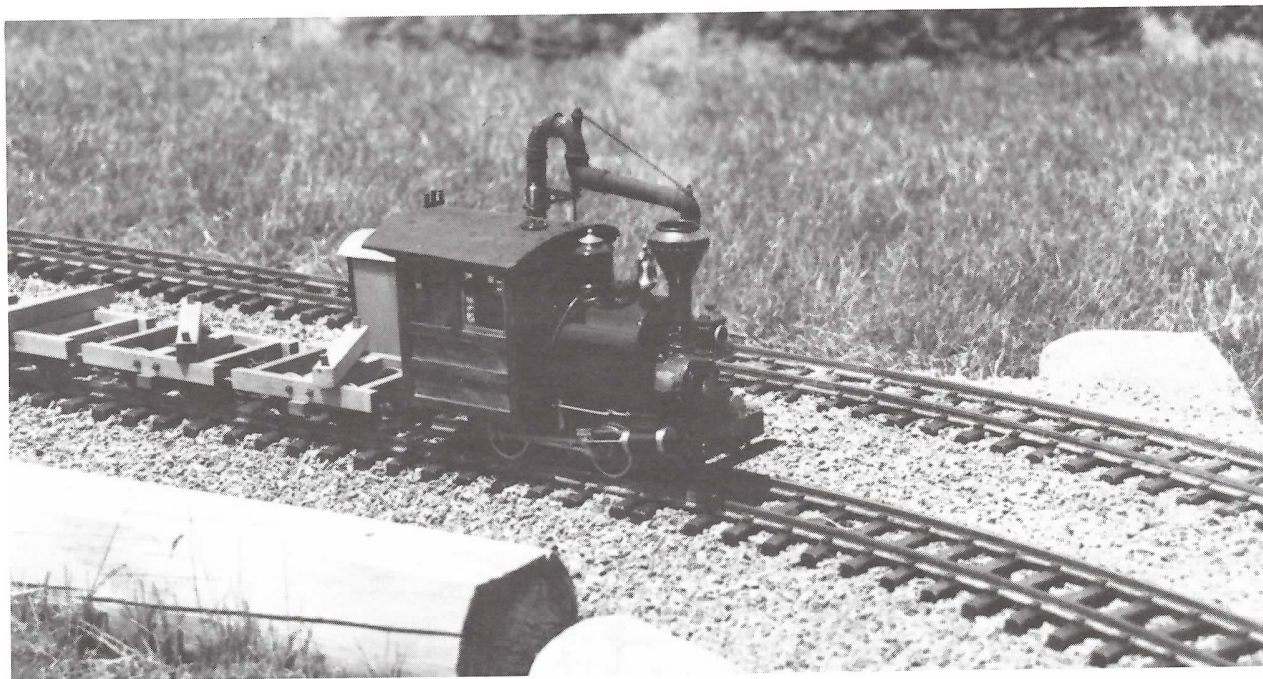
Steam Scene.....Along the Rails

We invite you to send in your favorite photos for this feature, always labeled with vital information like photographer, subject, where, when and why. Mail them in to SitG, P.O. Box 335, Newark Valley NY 13811. Please include a SASE with sufficient postage if you'd like your photos returned.



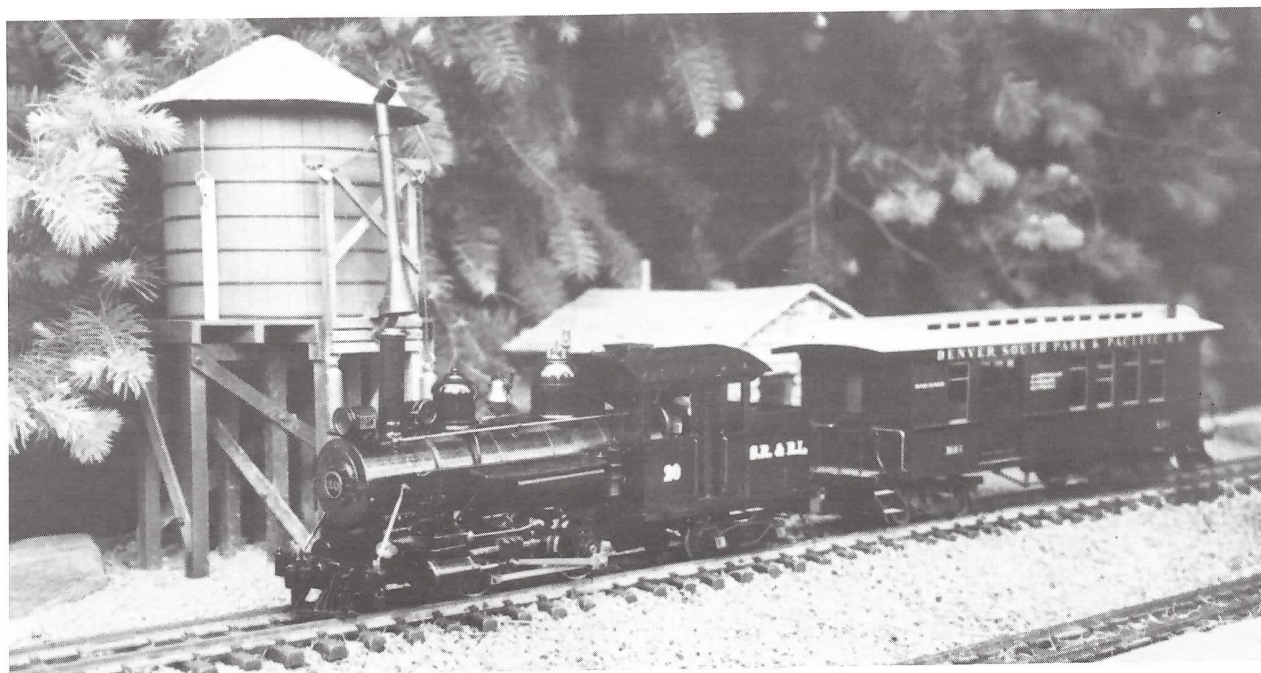
CAPABILITY BROWN, a Kenversions Mamod modification now out of production, has graced our pages before, but it looks so fetching in this photo we just couldn't resist. Fresh paint gleaming in the California sunshine, it's hard to believe that just a year ago it surprised and amazed us as it raced wildly down the tracks. At that time it was cleverly disguised as a fireball, leaving spatters of melted solder as it flew and trailing the acrid odor of burning paint.

Photo by Samuel Muncy



Nope, the crew is definitely not filling the saddle tank on this Wrightscale Porter through the stack! It's just the camera angle that makes it look that way. Owned and operated by Ron Brown, this beautiful little engine put in several excellent runs at a recent steamup in Pennsylvania. The custom wood cab, which really enhances the loco's natural charm, was built by Eric Lloyd, and the logging disconnects are from Little Railways. The locomotive is manually controlled, and will run very smoothly at slow speeds while running light or with a realistic load, unlike some of the smaller locos that have the running characteristics of a frightened hare!

Photo by Frank Ulman



It's a beautiful spring day in Pennsylvania's Endless Mountains, and the train has stopped to take on a passenger and drop off a small sack of mail and some mailorder seeds for a local homesteader. Before pulling out on the next leg of the journey, they'll take on water and give the crew a chance to rest and have a bite to eat. The engine, a SR&RL Forney, is currently in production by Argyle Locomotive Works in Australia. This particular locomotive belongs to Danny Long, and it turned in several good performances at Frank Ulman's spring steamup.

Photo by Frank Ulman

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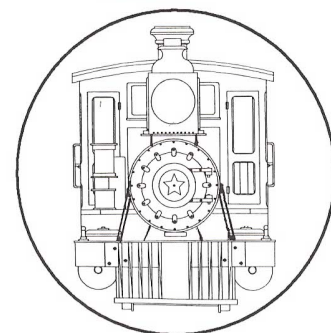
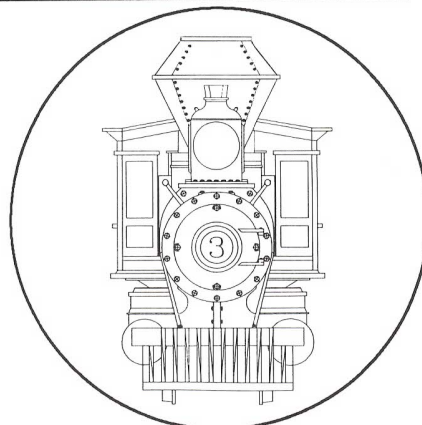
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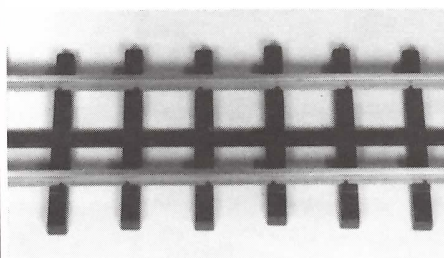
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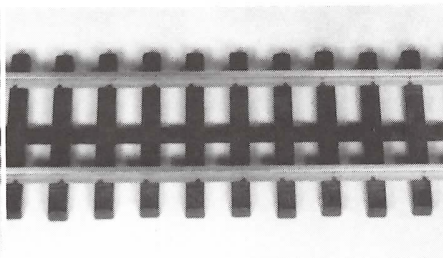
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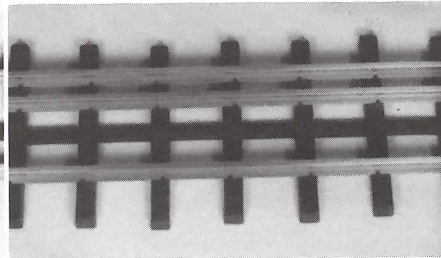
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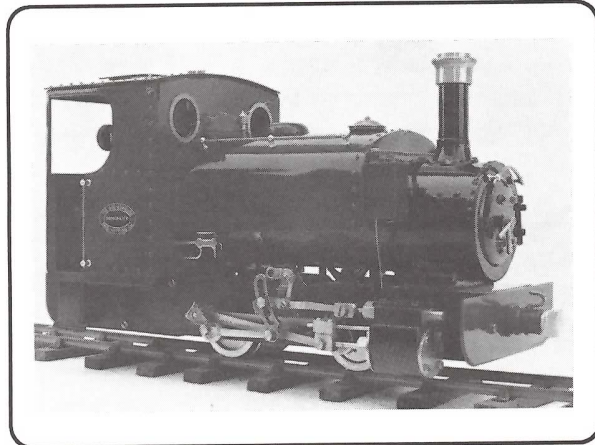
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See the review of this fine engine in this issue of **SitG** for all the details!



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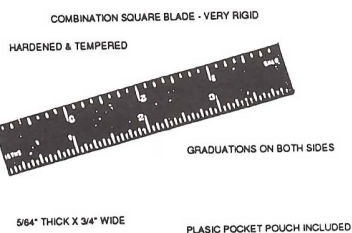
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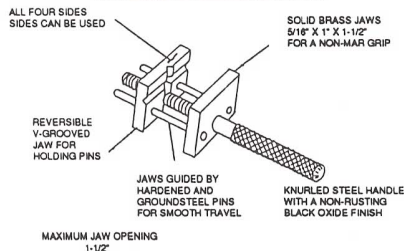
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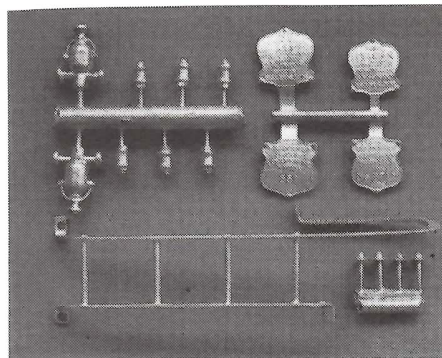
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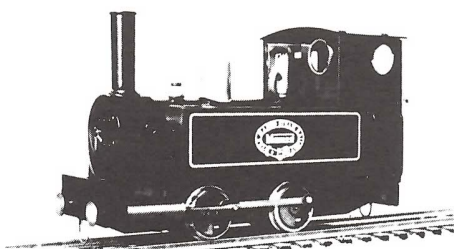
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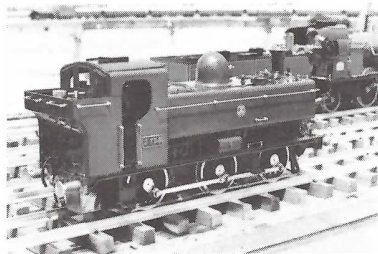
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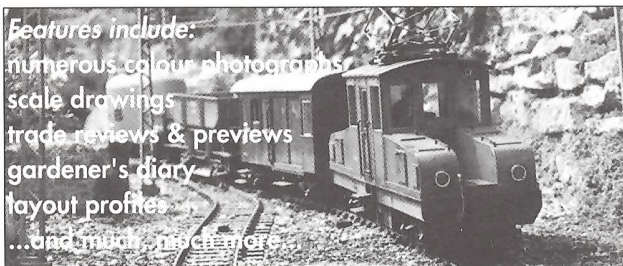
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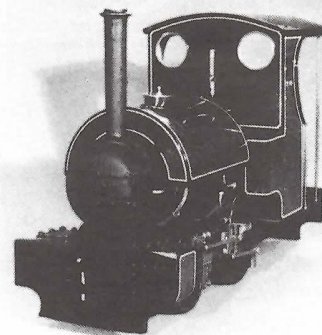
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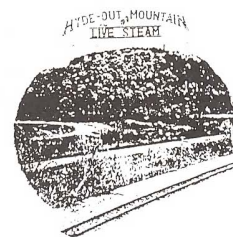
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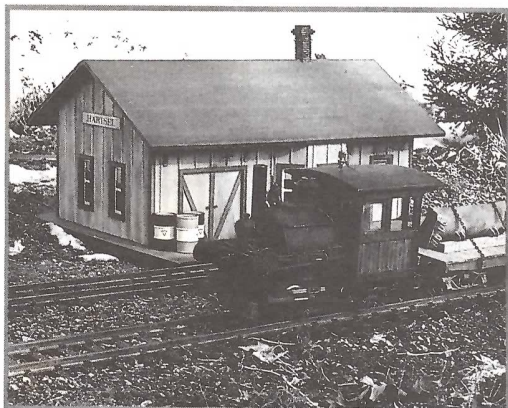
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END OF THE LINE

Here are a few last minute items that you might find interesting. A new advertiser, Bob Paule at Sulphur Springs Steam Models Ltd., just called to tell us that they are now carrying a variety of BA fasteners in brass & steel. This is good news for owners of British-made locos, as these fasteners are often very difficult, if not impossible, to find in the U.S.A. SSSML will also be carrying lots of the necessities for building, maintaining and running live steam engines.

There are at least two new small-scale live steam dealers in the States - JMG Hobbies in Port Ewen, New York

and Doubleheader Productions in Dallas, Texas. Give these guys a call and let them know you appreciate what they're doing for us. Believe me when I tell you that they are not in it for the money!

If you read the letters to the editor in this issue, you already know that a 3-day National-level steamup has been organized for Noblesville, Indiana in September. If you haven't read the details yet, check it out and make plans to attend.

In the next issue we'll have a review of COUNTESS, one of the excellent new locomotives from Pearse Locomotives in the U.K. - and lots more.

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Please tell our advertisers that you saw them in SitG. It will help them make the right decisions about where to spend their advertising dollars, and it will help us to keep providing you with a quality magazine - and the only forum devoted exclusively to the small-scale live steamer.

Brandbright Ltd., Britains largest small scale live steam supplier, is now 10 years old! To celebrate this, our 10th catalogue is now available, and it's filled to the brim with lots of new locos, including Finescale's Fairlie, Steamlines' "Little Giant" (now with WileSCO cylinders), Wrightscale's Porter (now available in kit form!) and Wrightscale's superb "WREN", now in kit form or factory built. The new Maxwell Hemmens "OGWEN" and Porter will be available soon, plus many others! If you are a previous Brandbright customer, the new catalog is on the way to you now. If not, send just \$3.50 for this treasure trove of live steam.

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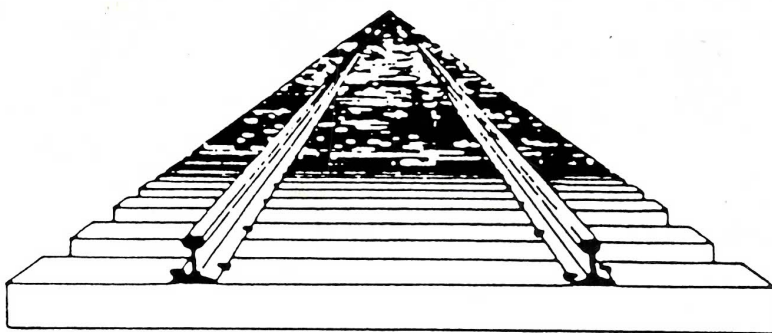
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