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VIEW FROM THE END OF THE PLATFORM



Incorporating GARDEN RAILWAY WORLD Issue 313 September 2020

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Printed by: Warners Midlands plc

Distribution

News Trade - Warners Distribution T: 01778 392417

Model Trade – Warners Trade Sales T: 01778 392404

Overseas Agents - Japan Erei Co, Ltd 1-1-12 Toyotama-kita, Nerma-ku, Tokyo 176

Subscriptions

T: 01778 392465 F: 01778 421706 (UK & Overseas) subscriptions@warnersgroup.co.uk UK: £57.00 12 issues (1 year) (UK DD: £11.99 Quarterly, £49.99 Anually) Rest of Europe: £71.00 12 issues (1 year) Rest of World: £83.00 12 issues (1 year) You can now manage your subscription online at: www.world-of-railways.co.uk www.warners.gr/gardenrailrenewals

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LET'S GO VIRTUAL

7ith all physical shows cancelled for the time being, at the start of July, we launched the first World of Railways Virtual Exhibition. For two days, "visitors" enjoyed over 10 hours of video, including interviews with TV stars, important figures from the model railway manufacturers and well-known modellers.

At the end of the weekend, which was the most popular video?

Garden Rail regular Dave Skertchley talking us through a tour of the Vale of Weedol tramway.

Unlike his last production, this time we visited Dave's workshop and saw how the models are made. Since the show was aimed at small-scale modellers, the OO boys and girls will have had their eyes opened to the fun larger scale can offer. Fun and low budgets too, since a full-fat OO loco will

cost as much as an entire Dave-built train, and he'll still have a few pennies left over for a pint of Auld Phagbutt at the end of it.

The full Skertchley production can be found at: www.youtube.com/ watch?v=py3R1NRKMt4

Anyway, virtual shows look like they are here to stay for a while. If I'm honest, I suspect that some will carry on even after life has returned to something like normal. They won't replace physical shows, instead, taking on a life of their own.

For the moment, we have to treat them as replacements and the next big event I'm aware of is the Virtual Yorkshire Garden Railway show taking place from 26 September to 4 October. Yes, it's on for nine whole days, try hiring an exhibition centre for that length of time!

This is a stand-in for the event usually held at the Elsecar Heritage Centre, which isn't going ahead for the usual Covid related reasons.

On the 26th, we are promised live content from layouts and trade, so tell your family you are busy and point your web browser at: www.yorkshire.16mm.org.uk.



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PK38769 UP Bogie Flat Wagon w/Chevy Nomad Load



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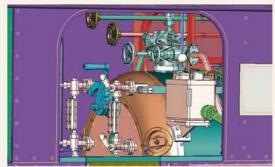


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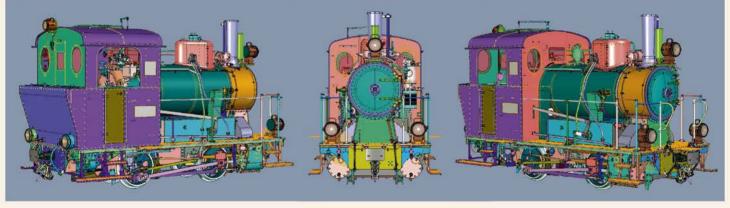




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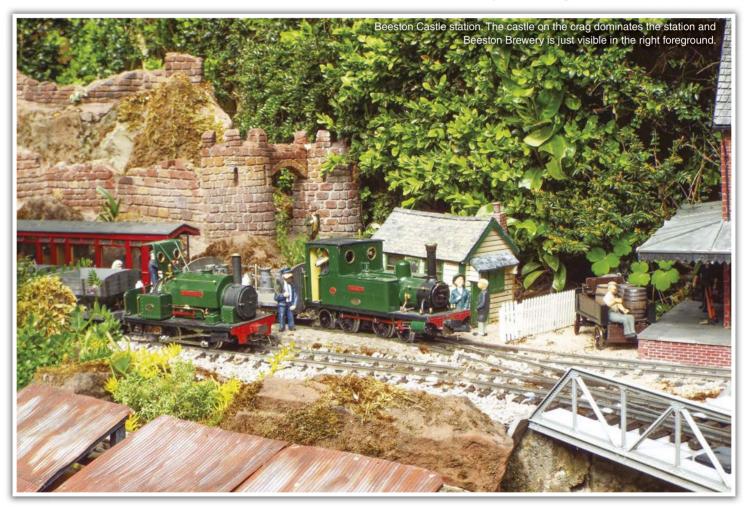
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The Peckforton Light Railway Revisited

One of the joys of garden railways is that they develop over time, so we can enjoy a re-visit and find out how things have changed and the lessons learned. Rik Bennett takes us back to the line that has formed the backdrop to many of his articles.



n the March 2012 edition of Garden Rail, I first described the Peckforton Light Railway as it then existed. Inevitably, things have moved on. Some of the changes were anticipated in the first article, but others have been unplanned and more than a few quite unexpected.

The Peckforton Light Railway is a model of the three-foot narrow-gauge line, which I have speculated might have been constructed towards the end of the 19th century in the Cheshire countryside near where I live.

In reality, the copper mines in the Peckforton Hills that the Peckforton Light Railway serves were never very lucrative but, in my imagined history, a rich seam was struck and hence the ore and spoil needed to be transported to the nearby standard gauge Chester to Crewe Railway.

My model depicts the railway as it might have existed in the early 1930s, a period chosen quite deliberately to explain why locomotives and rolling stock from recently closed narrow gauge railways have found

their way on to PLR metals. The line survived where others failed partly because of the copper ore, partly because of tourism, partly because of the patronage of Lord Tollemache, the owner of the Peckforton Estate, and largely because of thriving businesses and local residents who loyally support the railway despite competition from road transport.

The main PLR terminus is Beeston Market station, adjacent to Beeston & Tarporley Station on the LNWR main line. Inter-



change sidings allow copper ore, spoil, sand, gravel and merchandise to be loaded and off-loaded from the standard gauge railway.

Since 2012, the trackplan has changed slightly. A new garage allowed the station to be extended and the engine shed has moved. Two original goods yard sidings have been extended and another added. A representation of cattle pens suggests that Smithfield Market, which actually existed beside the mainline station, is 'off-stage'.

The extension also allowed for a station forecourt to be constructed, featuring Holmes's tearooms, a scratch-built Plastikard model based on the actual tearooms. which were originally located adjacent to the Beeston and Tarporley mainline railway station in the interwar period.

The new garage has enabled me to construct internal storage sidings where the majority of rolling stock is now located when not in use. Previously, I used stock boxes that were stored in the conservatory and lugged out and in before and after operating sessions. Two slipped disks in my neck rapidly put an end to that process! It now takes slightly longer (about an hour) to deploy the rolling stock to the five stations, copper mine and the two outlying sidings prior to running trains, but now no rolling stock, apart from locos, leaves the track and the deployment is carried out by one of my locos – which I find is far more satisfying.

Perhaps the most striking addition to the station is the representation of the Beeston Castle ruins on the crag behind the station. In 2012, there was just a hill and a few chunks of sandstone suggesting a castle wall. There is now a gateway, an outer bailey, an inner bailey wall and the remains of towers - carved from a couple of Thermalite blocks. These are sawn with an old wood saw and features are carved with the blade



Beyer Peacock(ish) 0-4-0T loco No 10 passes Peckforton water mill with the Down pickup goods.

of a screwdriver. They can be joined with mortar or gap-filling adhesives. I coloured mine with cement dyes, but watered-down acrylic paints would work just as well.

The next station is Peckforton. This too has been extended and detailed. The station area has been widened and the original short siding serving the timber yard extended and another added.

Previously, the timber yard was 'offstage'. A sawmill has now been modelled in stripwood and coffee stirrers, with a curved aluminium foil roof corrugated with a card crimper. The interior has been detailed and a cut-down Airfix beam engine bashed into a horizontal steam engine appearing to power the machinery with a series of layshafts and belts. In reality, the Peckforton Estate was

forested at the start of the 20th century and a sandstone sawmill actually existed - but I only discovered this after I had constructed my sawmill. A happy coincidence!

The layout of the station has been altered slightly and a new curved platform cast in concrete with JigStones stone platform edging. The yard now boasts a diesel shunter acting as a station pilot, handling shunting operations when mixed and goods trains arrive; for me, another interesting operational feature.

The line crosses the entrance to a small patio area on a viaduct, constructed by cladding a plywood structure with individual balsa wood 'sandstone' blocks. Once finished, the whole structure was soaked with wood hardener; the stuff used to treat



A general view of Beeston Market Station. 2-4-0T Barclay Loco No. 2 has just arrived with the early passenger and 0-4-0T Hunslet Loco No. 3 is shunting in the yard. Fowler 0-4-0DM has just taken its train of skips to the interchange siding and the Ford(ish) railbus is ticking over on the bay road. In the background, a freelance (IP Engineering) diesel is propelling skips towards the Copper Mine on the two foot gauge mine feeder railway.



Peckforton Station. Bagnall 0-4-2T loco No. 11 is about to depart with the early afternoon Down passenger while ex Davington Light Railway Manning Wardle 0-6-0T Loco No. 6 is shunting the Down pickup goods. In the background is the sawmill, which creates a lot of goods traffic on the line.

dry rot; for durability. I wanted a lightweight structure easily removed when not in use. A similarly-constructed 'sandstone' embankment at the Copper Mine has been left outside continuously for over five years now and it is only just beginning to show signs of ageing. The blocks are, however, still intact.

Shortly after the viaduct, the line runs beside a representation of the River Gowy, which cascades down a rocky gulley. A water mill is located on the opposite bank of the stream, constructed by lining a sloping trench with heavy-duty polythene and then concreting chunks of rock into place. The stream runs down into a sump containing a submersible pump.

The mill building was constructed from foamboard with window frames cut from the slatted paddle of a cheap pound shop plastic badminton racket. A wooden bridge over the river giving access to the Mill Siding was constructed from oak stripwood sections based on drawings of the bridge over the River Blyth beside the mill on the Southwold Railway.

We now pass by Bickerton Station, under the line as it leaves Beeston Castle Station and then reaches a crossover linking back to the original line (though now in the opposite direction). The crossover is taken to pass round the back of the workshop and then, rather than returning to Beeston Market, we take the left-hand line, cross over the Southwold inspired swing bridge, to reach

Bulkeley Station. The bridge was constructed from uPVC angle, glued together with superglue. It has been in situ for nearly 10 years now and, apart from a repaint and a repair where a wellie-clad boot caught it when accessing the workshop, it is still in remarkably good condition.

Bulkeley Station is a work-in-progress. The station area was widened this winter and then adapted to include two new sidings. I wanted a create a siding to the rear of the raised bed on which the station is situated so I could model another lineside industry in half-relief, similar to the Brewery and the Copper Mine buildings. The new siding will serve a bone mill. There was actually a boneworks in the Peckforton area right up to the 1960s. Carcases and manure are transported in, and glue, fertilizer and gelatine sent out. The real boneworks generated a fair amount of hostility in the locality - mostly owing to the overpowering smells generated as the carcases and bones were boiled and crushed, but also because the carcases were hauled through the centre of the neighbouring village from the station on open horse-drawn carts. For this reason, deliveries by the PLR are all made in tarpaulin-covered open wagons. I have decided not to reproduce the smells, though! My bone mill will be represented by a half relief structure in foamboard or cast concrete and there will be some tarpaulin-covered piles of unmentionable clutter in the yard. I am not aware of a bone mill having been modelled

on any other model railway layout – I can't think why?

At the end of Bulkeley Station is a branch to the left, which, as you can see from the plan, links back to the mainline behind the workshop. This is purported, the branch to the Copper Mine, actually located close to Beeston Market Station. The reason for its proximity is to provide a hidden link from the station to the mine – giving the deception that loaded skips of ore and spoil are reversed into an interchange, whereas in reality, they return to the mine to be swapped for empty skips. This enables me to run empty trains down the line and full trains up it. Two rakes of LGB skips - one loaded and one empty - contribute to the

A 32mm gauge feeder line has also been added, originally represented by a very short length of minimum gauge (16.5mm) track. There is now a five-yard length of 'two-foot' gauge track leading to the crusher shed and spoil chutes served by two small diesel locos.

Returning to Bulkeley, if we follow the main line, we now meet the crossover again, in the reverse, trailing direction and descend to pass below the track beneath Beeston Castle. Just before the underpass is a siding to the sand and gravel quarry. In reality, there was a quarry adjacent to the standard gauge station at Beeston & Tarporley. In my hypothetical world, this has been moved nearer to Bickerton to provide additional operational interest. A rake of Snailbeach-like hopper wagons transports the sand, which are filled from loading hoppers served by another short length of 32mm gauge track.

Beyond the quarry siding lies Bickerton Station, where there are two platforms and a couple of sidings. This station has remained largely unchanged since 2012. Its location is cramped and so there is little room for expansion. The only change is the provision of a Cain Howley cast concrete water tower. This is a marvellously-detailed structure which, being cast in concrete, is highly durable and knock resistant – particularly necessary as the only way to trim the hedge behind the station is to stand on it.

The end of Bickerton Station leads into another set of three short storage sidings located in the lean-to by the back door of the house. When I first built my railway, I had the naïve belief that these three short sidings would be sufficient to hold all the stock I would likely need on the entire line - a passenger train, a goods train and an ore train. I now use these sidings just to store the stock located at the Mill Siding and at Bickerton and Peckforton Stations at the

end of each running session. I find that I often run out of space for the stock at just these two locations!

The majority of my railway is constructed on raised beds, which were made from breeze blocks clad in sandstone. Apart from red sandstone being native to the area and hence in plentiful supply, it is easily cleaved (though not as cleanly as slate) and so I can make a few rocks go a long way when cladding the breeze blocks. The sandstone cladding is held in place with concrete to which some PVA is added to improve adhesion. The section from the workshop to Beeston Market is on wooden baseboards made from treated one-inch-thick fence rails, supported on four-inch square posts. This section was built into an existing laurel hedge, which was then shaped to accommodate the trackbed. Laurel would not be my first choice as a backing for a railway. I really like using lonicera. It has small leaves and can be readily trimmed to form miniature trees. It provides a fast-growing backdrop to, for example, Bickerton Station, which is actually less than a foot away from our neighbour's fence. It roots easily - hedge clippings can just be poked into the soil and I find at least 70-80% of them take root. I have started growing lonicera between the laurel stems and they are now beginning to take over, so eventually, I am hoping they will replace the laurel completely.

In 2012, I reported that the railway had four track-powered locomotives - three steam outline and one diesel. Since then, another 14 locos have been added to the roster. They are now all battery-powered and radio-controlled. I do have one live steam loco - a vertical boiler Regner - but it only puts in a very occasional appearance.

I see my locos as a means to the end of operating my railway as realistically as possible, rather than becoming ends in themselves. The convenience of having battery-powered locos overrides the desire to tinker about with gas, water and

steam oil. And besides – I scratch-bashed six battery-powered RC equipped locos for the cost of that one Regner! I don't actually need 18 locos – the maximum I have running during an operating session is seven, but I do like to vary the locos for each running session.

For me, the greatest joy I gain from my railway modelling is operating trains in as realistic a manner as I can manage. A full operating session representing one (summer) day's movement on the railway usually takes me two days. I run passenger trains on a sequential timetable and goods movements are generated by a computer program. This sometimes throws up combinations of trains and movements I would never have considered and some interesting shunting conundrums, particularly when a goods or mixed train becomes longer than a passing or run-round loop.

My rolling stock is largely bashed from LGB and HLW wagons. They are representations of rolling stock rather than scale models, but that suits the way I want to run my railway – they have to be serviceable, reliable and look about right. I have replaced the LGB style hook and loop couplings on my stock with home-made wire alternatives. I need couplings that are reliable, easy to operate and cheap! As they are compatible with LGB style hook and loops, I was able to replace them over a period of time with-

out having to shelve unfitted stock.

There is always plenty to do. Garden railway modelling involves an incredible number of skills and areas of knowledge so I am always learning and pushing the boundaries. I have recently acquired a cheap 3D printer and enjoy the fresh challenge of figuring out how to turn my creations and the wealth of drawings available for free on the web into reality. I actually bought it because I wanted to mass-produce the 14 seats needed for a model of a Country Donegal Railcar, which is presently under construction. Of course, it has now taken me longer to learn how to draw the seats in 3D and print them than it would have taken me to scratch-build them, but where would have been the fun in that?

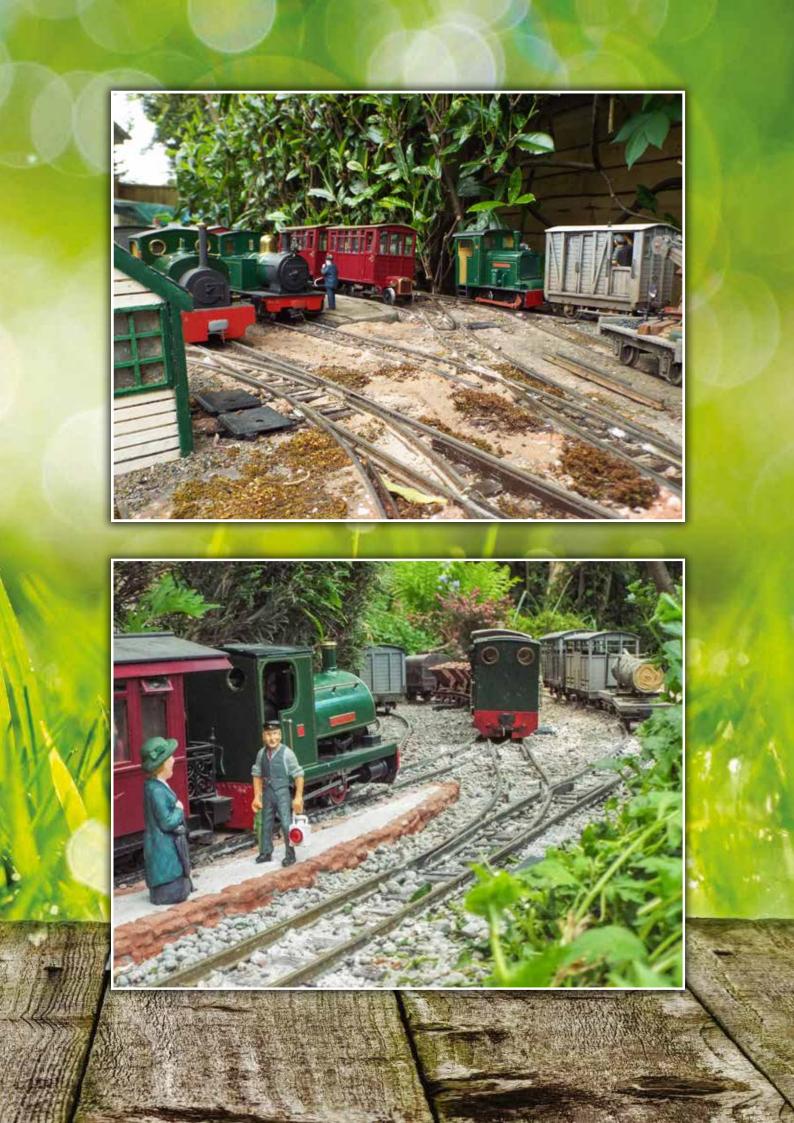
I feel really sorry for people without hobbies such as ours. I do hope that the time people have been forced to spend in lockdown because of the virus has helped them reprioritise what is important in their lives. Being forced to stay at home has certainly not been an imposition for me; I have seen it as an opportunity.

As a former teacher, I really feel garden railway modelling should become a compulsory subject in schools – it covers practically every area of the existing curriculum and more besides. But then, I suppose I might be slightly biased!

Fowler 0-4-0DM Loco No. 7 has just arrived at the Copper Mine with a train of empty skips. The Simplex is off to retrieve the guard's van, while on the two-foot gauge feeder a freelance (HGLW) diesel clatters off to refill its skips in the mine.







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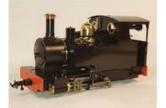
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ROUNDHOUSE

Popular Poplar

Mark Thatcher builds a 16mm single road engine shed from Bole Laser Craft.

n Garden Rail 305, I tackled the rather charming Dduallt station from Bole Laser Craft and recall commenting how cleverly all the sections interlocked with each other. It was a bit like building a 3D jigsaw, without the frustration of wondering where all the pieces go. I could see straight away during the unboxing of the engine shed that this kit followed the same slottogether principles.

Goody bag

Firstly, I had a quick read through the excellent nine pages of doubled-sided instructions. Complete with exploded 3D drawings, these are some of the best instructions I have seen, just like their station kit.

Top treats were in store in the small goody bag that contained some beautifully-crafted round louvres and a detailed 3D-printed chimney pot. Also, all the glazing for the windows was pre-cut, saving a lot of time for the modeller. Two door knobs for the office and two doors are present too. But, best of all were the 3D-printed hinges plus hasp and bolt for the two shed doors. These are full of detail and super-easy to align on the model as they pop into small punched out holes in the doors.

Also usefully included, but not mentioned in the instructions, are two small oblong sections of wood. I am guessing here, but these can be inserted into the notches of the layered sides to keep them aligned whilst the glue sets.

Poplar is the predominantly used material in this kit. There are also two vacuum-moulded ridge sections for the roof and faux brick laser-etched wood for the chimney stack arrangement. The main shed has some great interior detailing, so no worries about having the shed doors left open.

Also, the lean-to office building has plank lines etched into the front and rear elevations on both sides so it can be added to whichever side of the shed you prefer. Thoughtfully, Bole has included an extra door so you can add that inside the office on the side elevation of the shed should you choose to. Bole's control model was a trifle lurid with its light green and red colourway. I knew mine would be more rough and ready and I would put all that laser cut wood to good use.



Size matters

Before starting assembly I wanted to know which of my locos would fit inside this shed, and which would not. The available internal length of the engine shed is 343mm, so will comfortably accommodate most 0-4-0 and 0-6-0 locomotives. For example, at 315mm over buffers, a Roundhouse "Lady Anne" will drop in nicely. However, at 390mm and 400mm respectively, my own Roundhouse "Owain Glyndwr" and L&B "Taw" will not. I know, where do you stop? Size does matter though, and perhaps another 50mm or so in length would have been useful.

When I commenced this build, I knew I wanted to retain and showcase the grain of the wood. Many years ago, I coined a phrase, "you can't scale wood and you can't scale water!" What utter drivel, as was pointed out to me during one of my club talks. Of course, different woods have different sized grain, and whilst we can't alter the molecular structure of a water droplet, thanks to resin-based products from the likes of Deluxe Materials, we can certainly model it.

I painted this kit completely before assembly in the same way as Dduallt station, except I opted to stain and weather-down all the wooden parts to add some grime and age to this model. Firstly, I brushed on







The results of the Colron wood dye. From left to right, bare wood, one coat, two coats.

Colron's Georgian Medium Oak wood dye to all the planked wooden parts to darken them up a little. The first coat was quickly absorbed, and the second soaked in to produce a nice overall effect.

TIP: When you do this, try to find a flat brush and use the same brush for the entire process. Different brushes will hold differing amounts of paint and/or stain, so try to keep the amount of stain consistent. If you prefer, you could apply the stain with an old rag. Don't worry if it looks a little patchy, this is a good thing, as wood weathers differently over the years.

I further toned down the appearance by adding a little more stain in places at the bottom edge of each component and added a little black weathering powder to darker areas, under the eves and around the doors and windows. I also went a little heavier with the weathering above the front doors to simulate the build-up of soot from the engines as they made their way in and out of the shed.

Industrial Colourway

After the woodwork was completed, I had to decide on the overall paint scheme for the rest of the model, opting to paint the windows in Halfords grey primer. Perhaps they started off-white, but would not stay that colour for long on a much-used engine

The door frame and window frames were spray-painted with Halfords Vauxhall Pine Green. The accurate slot-together nature of this kit meant it was far easier to paint the roof ventilator parts prior to building this assembly. It would be challenging getting paint into all the nooks and crannies after this was built in any case. I brush-painted the interior Satin Cream from Coach & Wagon Works. Prior to this, I used their MDF sealer to ensure the light cream colour did not soak into the wood and dry unevenly.

I learnt from Dduallt station that I could get away with spray painting the chimney components with Halfords Red Oxide Primer and could still see the mortar lines in the brickwork. Then, I picked out the odd brick here and there with Humbrol Orange Lining (HR 132) from their authentic colours range. This range is now defunct and I was lucky enough to be gifted around 30 or so of these colours many years ago and am still using them sparingly to this day!

I think that broadly my painting plan had come together and my chosen industrial colourway reflects the weather-worn nature of a well-used engine shed. I was going to weather down the brickwork further, but it looked so punchy compared to the rest of the building, I decided not to do this straight away.



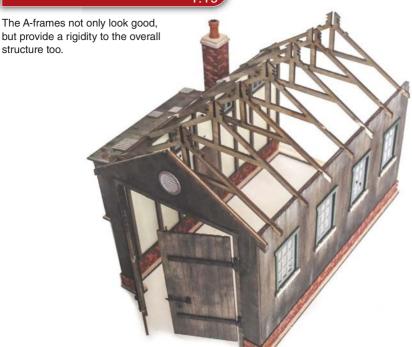
A test fit of the side and end wall here gives an impression of what the interior of the shed will look like when it is finished.



This is the first time I have used this wood glue from Coach and Wagon Works and I found it to be very good, with a drying time of around 10 minutes. I also used their clamps to hold everything in place whilst the glue set.



I started the final assembly with the office first and that provided a vertical plane to work off when adding the other three walls.





The wooden roof section clips into place and sits on the raised square pips on the A-frames, then the plastic roof is glued onto that. Make sure you fit the lower louvres to the roof ventilator before this step, as they won't go on afterwards.

The interior is not weathered at the moment, but I'll dirty it down later. Of course, if you drive live steam engines inside, they will do some of the work for you.



Time for a tinny!

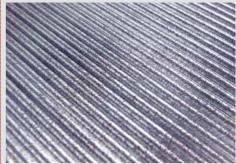
It is no secret that I love modelling tin roofs and getting them all rusted up, so once again, it was time for a tinny! The painting process is incredibly quick and easy. I started by spraying the three tin roof sections over with silver paint. I like to use the Metallic Effect silver in a rattle can from B&Q. Then I hit a very light coat of Pine Green over that as a nod to the fact that possibly in the dim and distant past, the roof was painted

green. Finally, I blew over the merest dusting of Halfords red primer to complete the look.

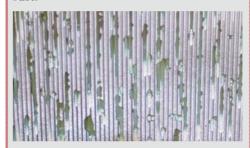
I was a little cheeky and asked those nice people at Bole Laser Craft for a little extra roof material, which was sliced up in random sizes and added over the top of the existing roof to simulate the patching up of a leaky roof over a period of time. These extra roof sections are now available for £3.00, so if you wanted, you could do the same.

Once I had broadly achieved the overall

Painting a corrugated iron roof



Spray a coat of Appliance Silver from Halfords as a base coat. Mist over a very light coat of Halfords Red Rust primer - if you go too heavy you can add more silver. Mist a light coat of Vauxhall Pine Green. The effect is very subtle at this point. Then add a further coat of red rust.



Deluxe Material's Scenic Rust is drizzled onto the roof sections. If you put too much on, because the carrier fluid is PVA-based, it can easily be removed once dry by prising under the rust with a cocktail stick and peel it off.



You can see here a greenish tinge as the rust is starting to develop.



Here is the finished result after the rust has fully developed and corrugated roof patches have been added.

look that I wanted, out came my bottle of Scenic Rust from Deluxe Materials. It is easy to use. Essentially, you add some rusting powder to their rust binder solution, which is similar to PVA glue, and drizzle this onto the roof. I set the roof at a very slight angle, propped up at the apex with a couple of small paint tins. Then I worked from the apex down. Then, once this solution was dry, I brushed on a coat of rust developer. Go easy with this last stage as you can easily add more rust than take it away. Then, sit back and do something else for eight hours and wait for the rust to magically appear.

Hardly any glue required

I am not going to make too much noise in this section about the actual build, due to the simplistic and accurate slot-together nature of this kit. During a conversation I had with the manufacturer, they let on that at shows they demonstrate the accuracy of their kits by slotting one together without the use of glue! That is how good a fit the parts are.

The only thing you need to take heed of is to get the overlays accurately laid on the inside of the shed and at either end. You can use the small oblong bits of wood to keep everything aligned whilst the glue dries. I would advise you to clamp these components together so they don't shift during this process.

The roof support for the office and the A-frames for the shed can then be installed prior to gluing the wooden roof parts in place.

The chimney was fixed into position next. Please have a trial run if you have not built one of Bole's kits before as it is essential the chimney support sits flush to the bottom of the assembly otherwise the cross-sections won't fit. I used the side of the building where the chimney fits as a sort of a jig but did not glue the chimney to this side yet as it is far easier to paint it on its own.

The moulded plastic corrugated roofing is cut to size already, so just slotted neatly into

I then built up the roof ventilator assembly from the parts previously painted. Two moulded plastic apex sections are included in the kit. One sits atop the main roof and a second one can be used the other way up to simulate leading between the office and the shed itself. I dispensed with these though, as I prefer to use real roof leading as used in our 1:1 scale world. These sections are excellent, though and make a good contribution to my box of spares.

Push-fit

The final treat in store was to hang the doors. Like the rest of the kit, there is no guesswork here either as the hinges, bolt and hasp are a push-fit, located in the pre-cut round holes in the doors, so you don't have to worry about lining them up accurately. Likewise, there are similar holes in the front elevation to push the brackets into. The wire can be inserted as a tight push-fit to get the doors swinging, with no risk of them getting bunged up with glue. This is probably the stand-out feature of this kit and is a great

illustration of how well thought out Bole Laser Craft's range really is.

So, what's not to like? Not a lot. Maybe another 50mm internal length would have opened up this model to owners of longer locos, but as I said earlier, you have got to draw the line somewhere. We would all like to have our Garrett loco on shed behind our Double-Fairlie wouldn't we? Come to that, wouldn't we like to own a model Garrett and a Double-Fairlie in the first place?

All in all, this is a brilliant piece of wellthought-out design. It is a kit that anyone can build. It is simple, relatively quick, and incredibly rewarding to construct. The components are crisp and clean. The detailing parts are accurately made and the door hinge assembly is a show stopper for sure. At £90 you get an enormous bang for your hard-earned pennies, too.

In a way, this kit is a bit like a well-behaved puppy. You just need to say "fit" and "stay", it does precisely that and there is no messy clean-up afterwards either!

Garden Rail Resource

BOLE LASER CRAFT

Yew Tree House, South Street, Bole, Retford, Nottinghamshire, DN22 9EJ. www.bolelasercraft.com Single road engine shed £90

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Please mention Garden Rail when contacting suppliers.



Looking at the back view, the model has the unmistakable air of an industrial engine shed.



How to Haul a House brick

Professor Dave Skertchly wanted to find out how powerful his locomotives really are and built a dynamometer to find out.

o just what is the power of our favourite locomotives? The problem is that Newton's first law of motion states that an object either remains at rest or continues to move at a constant velocity, unless acted upon by an external force. In other words, and in theory, to haul a load along a straight level track should take no power at all. I decided I would make a dynamometer to measure my locomotives and find out.

A dynamometer is simply a railway carriage or truck which measures the pulling force of the locomotive. The first dynamometer was built by Charles Babbage, who also invented a mechanical computer. He built the dynamometer for the Great Western Railway to settle arguments about locomotive traction as part of the "gauge war".

Initially, I put a house-brick on a truck and tried to haul it with the spring balance we use to measure Pauline's suitcase. It

Dave started by making a spring by wrapping different gauges of steel garden wire around some old steel tube. This was fitted with a Binnie coupling at one end and a guide at the other that included a pointer.



did not even register. I bodged up a spring balance from a piece of wire from a spiral bound notebook, which I calibrated by hanging metal junk in a paint spray can lid weighed on my kitchen scale.

Wanting to account for different operating conditions such as on the straight and on curves, I decided to build a spring balance into a truck.

To make some springs, I wrapped different gauges of steel garden wire around some old steel tube that had once held up our raspberry plants. A length of the same steel tube was cleaned up. At one end a Binnie coupling was fitted and at the other a guide, which included a pointer. The springloaded plunger and spring run in a trough to which the running gear was fitted. At rest or with no load the plunger is retracted. As the load increases against the spring, the plunger extends enabling a reading of the force to be taken from the scale.

To calibrate the scale, the truck was calibrated in the same way as my prototype spring balance, by holding it up and hanging weights on the end. The scale was written clearly and stuck to the platform. Importantly, the unit of measure for force is the Newton, but here on Earth where gravity is constant, we can assume that a Newton is roughly 0.1Kg or about 100grams, in this article, force is given in grams, since it is a number to which we can all relate even if we are non-technical.

Readings were taken at five positions on my line. Eastbound and Westbound at Llatireggub, which is straight and almost level, at Abernuffawun where there is a nasty tight curve onto a slight gradient, at Llatidos junction there are turns to the left and right, the final test was approaching Rainbow Rock where the tracks are infested with weeds, hence increasing friction.

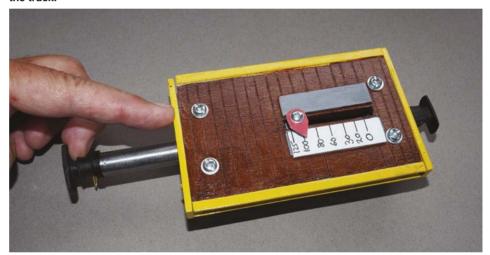
A set of four carriages with 12 axles was selected to represent a standard train. The carriages were weighed carefully and came to a total of 1.7kg. It was coupled up with the dynamometer positioned between the engine and the train, the train set off and the results were recorded. On the level, a force of only 80 grams was required to keep the train moving and, even on the tightest, nastiest curve, a force of less than 120 grams was still sufficient. This is less than 1/15th the weight of the train.

The test was repeated with just half of the train coupled to the dynamometer, which is 0.9kg, and, as expected, the forces measured were about half the force required to haul the full train.

The weight of the standard train (1.7kg) was then loaded into just one of my Welsh highland trucks. This was then coupled to the dynamometer. The results showed that using a single truck with just two axles, I



The whole spring and plunger was enclosed in a trough, which then mounted the running gear. A pointer was made up that would be mounted to the guide through a slot in the floor of the truck



The dynamometer in Engineering department yellow and grey paint with a wooden floor. At rest or with no load the plunger is retracted. As the draw bar force increases against the spring the plunger extends enabling a reading of the force to be taken from the scale.



A set of carriages with 12 axles was selected to represented a standard train. The standard train weighed in at 1.7kg. The train was coupled up with the dynamometer between the engine and the train.

1.19

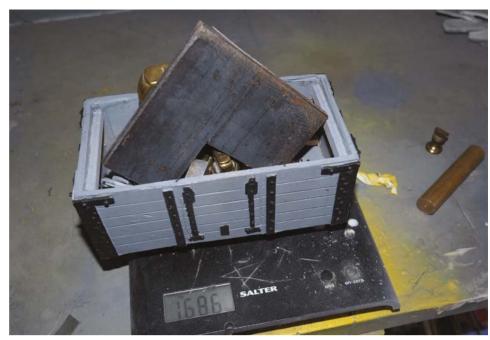
could haul the same weight as a 12-axle train with less than half the force. It seems that the key to hauling heavy loads is not the weight of the load but friction.

Weights were then spread equally between three identical trucks and the force remained roughly the same. How could that be? I suspected that the lower loads spread on my simple bearings had reduced the friction in the bearings by about 2/3.

Finally, the time came to couple up the house-brick to the dynamometer. The sight of a house-brick trundling through Llatireggub station created some consternation among the regulars, but it seems that just 110 grams is required to haul a house-brick weighing 3.4kg and that, I suppose, is the wonder of railways.

I wasn't finished yet, trains accelerate notoriously slowly so what force would be required to start a train moving? The tests were repeated but this time measuring the force as the train started. These figures are influenced by my modest driving skills controlling the acceleration, but even so, the force required was between only 80 and 120 grams.

Curiosity had by now got the better of me, I wanted to know the maximum force

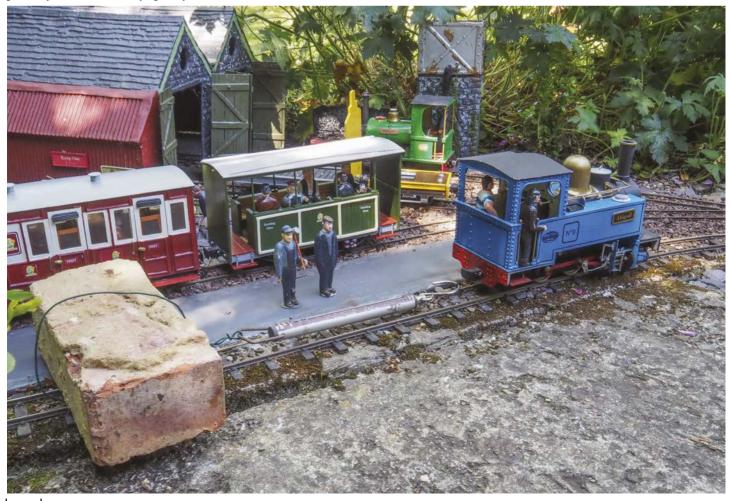


The weight of the standard train (1.7kg) was loaded into a single Welsh highland truck. Later, the weights were then spread equally between three identical trucks.

my locomotive could apply before the wheels spun. This is roughly the maximum tractive effort.

I hooked the locomotive up to the same house-brick laid on the track with a spring balance. I was cautious having previously stripped the gears of one of my smaller locomotives doing this test, but "Abigail" the Blanc Miseron pulled manfully up to 225 grams before slipping. So the maximum tractive effort of my locomotive is about 225 grams.

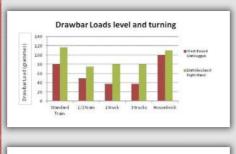
Trains accelerate notoriously slowly, so what sort of draw bar force would we need to apply to get a train moving? To measure maximum tractive effort the locomotive was tied with a spring balance to the same house-brick on the track. The engineers are obviously not concerned for their safety, if anything gives way there will be bits flying everywhere.

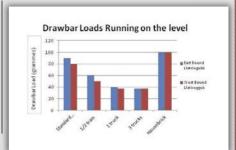


Finally, I wanted to find out the horsepower of my locomotive. It is normal to work this out using the drawbar force and speed of the locomotive, but a quick and dirty approach would do. The current drawn by the locomotive was measured by hooking the multimeter into the wire to the motor and multiplying it by the battery voltage, which gives the power in Watts. I applied a brake with my thumb on the wheel. The answer is between one and sixthousandths of a horsepower.

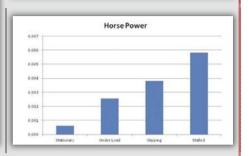
So, when running on a level track, we can see that the load our trains can haul is determined by the tractive effort to get the train rolling and then by the friction in the bearings and the wheels. For a typical model train, the drawbar force is less than a quarter of a kilogram. The weight of the train is relevant only to the ability of the locomotive to cope with gradients. Roughly we can guess that this is the weight of the train multiplied by the gradient in, so to haul a 3kg train up a 5% gradient we need a force of 150g grams.

Yes, I know the figures are very rough and ready. The measuring of locomotive performance was the cutting edge of Victorian Engineering. There would have been, and still are, whole departments of boffins debating, calculating and measuring the performance of our favourite









Results

A full set of results will be posted in the Garden Rail section of www.RMweb.co.uk

locomotives. This is, however, a fun hobby and to many, this article will be of passing interest but maybe the debate could continue on the correspondence pages or on RMweb. Who knows, maybe some suppliers might even choose to quote the power and tractive effort of their locomotives.

As I sit on my rustic park bench outside

the Sheep Shearers arms, I think about the next steps in my project. Should I start to measure acceleration, thermodynamic efficiencies and dynamic braking? Should I brush up on my calculus or should I have another pint of fine Auld Phagbutt and watch the trains go by – cheers! ■



Living with rail clamps

Tired of fishplates that refuse to hang onto your rail? John Dunford looks at rail clamps.



Bottom row: All made by Hillman. LGB Fishplate over type, LGB Direct to rail, ditto Isolating, conversion from LGB Rail to Peco Rail again direct to rail, Peco Rail direct, Peco Rail for Track Feed, Peco Rail insulating.

oting the editors' concerns in issue 310 about rail clamping and expansion, I thought that both he and others might like to know some of my experience. I have been using rail clamps since around 2000, having paid for and collected a delivery of a lot of Hillman ones

in the San Diego youth hostel when visiting that year. These were for my then predominantly Peco rail system, though there was a good proportion of LGB track that was also clamped.

The initial LGB over rail clamps had been delivered to a friend's house near New York

a year or two earlier and I bought both sorts to add to my stock of LGB ones from a previous layout.

I am pleased to say that expansion has never been an issue with clamping rail, either with Peco, LGB, Trainline or Aristo Track, the last three being to LGB rail size.

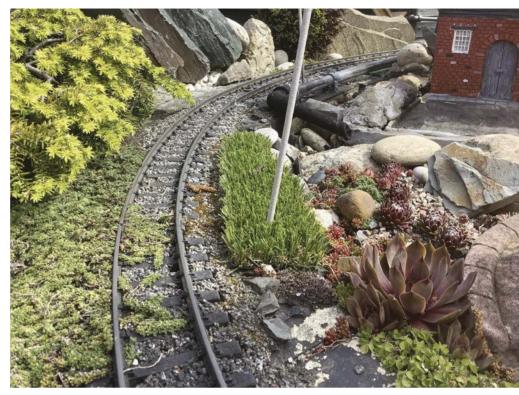
Tools for clamping: A Hillman Wrench, Hillman Drill Key for use with the drill on lowest setting, Allen Key, modified Allen Key for getting into tight spaces, another modified Allen Key glued into wood that makes the initial tightening easier. All are used for tightening the Hillman Clamps together, not too tight as brass screws may strip their threads or break.



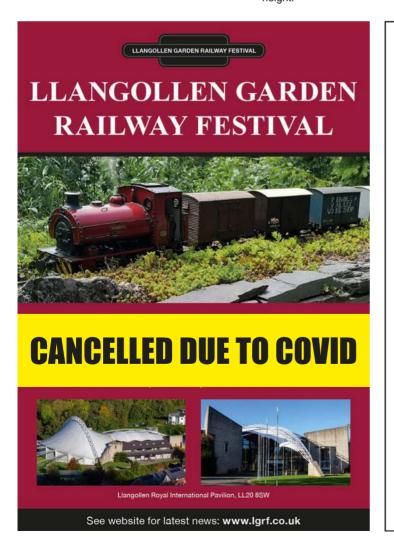
In fact, I also have a good few Massoth Clamps bought when my new line was built, as Hillman had departed from the market by 2012 when I moved. All have worked well both over clamps and sans fishplate types.

There can be odd issues of expansion in full sun, but nothing has caused issues with running or derailments. In one station, where track has lifted from being glued down, it settled to a positive camber, not that trains run that fast on my line as it is limited to scale 20 kph, the speed on my chosen prototype, the Selktalbahn in the Harz Mountains in former East Germany. Believe me, quality running is something that I put the highest regard to during my timetabling sessions, with up to five operators present.

In summary, I find that track clamps of varying makes, and there are others as well as those that I have mentioned, are a great help with ensuring positive power between rail joints with little loss of current with the added value that they provide additional security. How many model railway thieves could manage to walk away nonchalantly with a circle some 40ft long by 20ft wide? Nuff said. ■



The ballast (granite 2-5 mm size) has been glued down with watered down external PVA and the only place where it has lifted slightly is on this curve. In fact, glued ballasted straights appear to be more stable and have no issues at all with lifting. I put this down to the fact that, like the real thing, expansion rather than being along the linear length (something that anyone has exhibited at a show will know all about), I believe that mostly with clamps the rail expands somewhat less in width or height.





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Improving the Accucraft Isle of Man G Van

Intimate knowledge of the prototype allows Dave Booth to perform a few upgrades to his model.



The new Accucraft G Van was reviewed in Garden Rail Issue 310, and whilst on the whole, this is a very good model, I feel it could do with a few cosmetic improvements.

Firstly, I run on 45mm in my garden with the higher coupling height appropriate to the Isle of Man Railway (IMR). So, the first thing to go was the overscale Accucraft chopper couplings, which are set at the lower height on the model as delivered; these were simply unscrewed.

The next item I set about removing was the plastic tab for this lower coupling option. To achieve this safely, I removed all the running gear, wheels and W-irons, and also the roof (there is a small screw at each end) to make the body of the model easier

A couple of 3mm square packers were then attached to the end of the wagon with Blu Tack to keep everything square on the circular table saw. Great care needs to be taken now in order to make a precise cut to remove the entire tab and no fingers - I managed to achieve this without shedding any blood, which is quite an achievement for me!

I decided to use the scale IMR chopper couplings, which were available from Accucraft a few years ago, but similar DJB Engineering couplings, if still available, would be just as good. A square hole now needed to be cut in the centre of the headstock measuring 8.5mm x 5.5mm. I made-up a small jig from 12.5mm x 24mm x 0.5mm brass complete with 1.5mm holes in a rectangular pattern. The jig was fixed in the centre of

the headstock and these 1.5mm holes drilled through the plastic.

After removing the jig, the holes were opened-up to 2.0mm and the resulting rectangular hole opened-out to 8.5mm x 5.5mm with a file. Note: I found the Accucraft pre-drilled holes for the original chopper couplings to be a little low; the square hole really needs to be right in the centre of the headstock.

I've worked on full-size IMR goods stock projects and the unladen height of the couplings from rail head is specified at 2'-4" and the laden height at 2'-3" i.e. 35mm and 33.75mm respectively at 15mm scale. Therefore, when modelling, if I manage to get a coupling height somewhere between 35mm and 34mm, I'm more than happy.

In order to retain the new coupling ar-



A couple of 3mm square packers were then attached to the end of the wagon with Blu Tack to keep everything square before the tab is cut off on the circular table saw.



Using the brass jig to chain drill the holes for the large square coupling hole.



The new coupling is held in place with an 8BA x 1/2" long countersunk screw, which also acts as a pivot.



This illustrates the current state of the 12" to the 1' project I'm involved with, an extensive rebuild of van G1 of 1872 by the Isle of Man Steam Railway Supporters' Association. The joinery for the underframe is now all but finished and makes a good reference for modellers.

rangement, an 8BA x 1/2" long countersunk screw was employed, which also acts as a pivot. However, be careful with the depth when drilling and taping this hole - you don't want it appearing through the top of the headstock!

In my opinion, the wheels as supplied are far too shiny, therefore, prior to re-assembly of the running gear, I painted them satin black to match the finish of the model's other iron work.

An error on Accucraft's previous IMR goods stock model, the M wagon, which has been perpetrated on this model, is on the hand brake. The cranked handle should step-out from the frame rather than in. The simplest way to correct this is to remove the pin/bolt at the brake shaft end and turn the handle around. However, this does have one drawback in that the chain is now fixed to the top of the handle rather than the underside - I decided to live with this.

Finally, the G5 model I have is one of those with 'porthole' ventilation, the model coming supplied with loose covers and latches, which I decided to have these open on one side and closed on the other. I found the easiest way to fit these was to fit the latches and covers as desired and then put a small amount of glue inside the vehicle at the necessary spots prior to replacing the roof. This reduces the risk of getting glue on the outside of the body and spoiling the finish of the model.

I feel these few mods transform a good model into quite an accurate representation of the prototype. The only outstanding item now is some serious weathering - IMR goods stock was seldom looked after.



Flipping the brake lever over means the cranked handle now correctly steps-out from the frame rather than in, at the cost of the chain now being fitted to the top.

An Edwardian railcar

John Mileson scratch-builds an unusual vehicle in Gauge One.



key display at the Warley Show last year was the 1903 North Eastern Railway railcar. At the time it was built, steam-powered railcars were common but they had serious and fairly obvious drawbacks. Boilers and their associated valve gear were heavy, cumbersome, dirty, unpleasant to drive and took up valuable passenger space. There wasn't a lot going for them really!

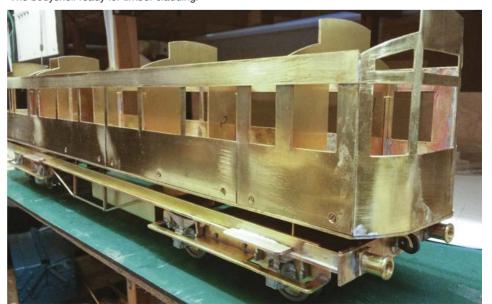
The introduction in the North East of England of electric rather than horse-drawn trams led Wilson Worsdell and his colleagues on the North Eastern Railway to think laterally. Lo and behold, in 1902/3 they came up with the idea, not of using an external power source that trams use, but to generate electricity onboard a railcar. An onboard petrol engine would drive a generator, which in turn would power electric traction motors. The original railcars were the first in the world to use this type of propulsion. The benefits were obvious. Clean, quiet, smooth in operation and, although the engine and generator set took up a fair amount of space,

these 35 ton, 53-feet long railcars could carry 52 passengers in comfort.

At that time, engines and generators were in their infancy. During the almost 30-year lifespan of the two original railcars, each had

The bodyshell ready for timber cladding.

at least three sets of engines, each generation being more efficient, less bulky, and more powerful. The beautifully-restored engine, No. 3170, was a welcome visitor to Warley and attracted many admirers.





The underside of the power bogey showing Fosworks traction unit and radio control unit.

The model

Inspired by the original, I started to build this Gauge 1 (10 mm/ft) model. I made two simplified bogies from brass, the power to one set of wheels coming from a Fosmotor 30 - very simple to fit, and an easy solution.

The original bodywork was made from timber, and the model needed to reflect this. With only basic workshop facilities of a bandsaw and drill, I made the body from brass sheet. This sounds more difficult than it really is. All those windows to cut out! However, by drilling a series of holes (chain drilling) as close to the marked out frames as possible, then chiselling out the inner waste panel, the apertures can be carefully filed to size. Yes, it's a bit tedious but quite satisfying.

The sides are straight in all planes, with no tumblehomes as found on most carriages. The only bending to do involved the front and rear panels, which were folded to suit the previously cut floor profile. One end folded easily, the second went a bit, well, wrong is an understatement. So a third end was made, which, like the first, folded up right.

Using 1/4" x 1/4" brass angle, the side and front panels were screwed to the floor using 10BA screws. Being fixed in place means that, provided the corners are clamped together with cheap crocodile clips, soldering the corners using a small gas blowlamp and 145-degree centigrade solder is an easy task. Notice the inner strengthening bulkheads, which also profile the roof and clerestory.

The next job was to paint the interior using Halfords car spray. A fully timbered and panelled interior would have, on reflection, been good. However, fairly crude seats were made from wood, and do give an impression of interior fittings.

I was a little apprehensive about cladding brass with timber. The finished car has, after painting, to look like it was constructed from wood. Too much sanding down would give a superb finish, but all the character of the timber strips would be lost. The strips themselves were cut from 1mm thick good-quality plywood, edges lightly sanded, and then stuck in place with superglue. It took some time to ensure the strips were not pushed up too tightly together - a small gap was left between each. Light sanding removed any slight discrepancies.

Because the body was independent of the floor and chassis, it could be removed. This was done, and the roof (2-3 layers of strips of plywood) was stuck on to the bulkheads forming both roof and clerestory.

Finishing touches

I find effective glazing using perspex or similar very difficult to do. Glue squeezes out, glazing material buckles and is easily pushed in when handling a completed model. Where possible, I opt to use glass. With a little practice, cutting 2mm thick picture glass is satisfying and easy. The glass panels were then secured to the inside of the interior with clear silicon.

The body of the railcar had been primed using Halfords grey primer. The surface of the wood panelling was very lightly rubbed down prior to brush painting. The paint I used was Pheonix Precision Paints Buffer Beam Red (which matched the original), and GWR Coach Cream.

Control

The railcar is battery powered and radio-controlled. Having also decided to install a sound system, I contacted Steve Foster of Fosworks to order something appropriate. Knowing nothing about radio control, the system comes fully wired and ready to go. Only two wires to the Fosmotor required connecting. Steve devised an appropriate noise. The old sounding engine is heard starting up, idling, and then purring away as the railcar moves off. Marvellous.

Conclusion

Was it worth the effort and expense? When scratch-building any model, particularly without adequate plans, it is always a little hit and miss as to how the finished model will turn out. I am quite pleased with this railcar, and it took little effort and time to complete. As to the cost, I estimate the total would have been about £380, including radio control etc. The model, although I used brass, would be an ideal candidate for modelling in 'Plastikard' or wood, requiring a few hand tools to complete. Worth a go!

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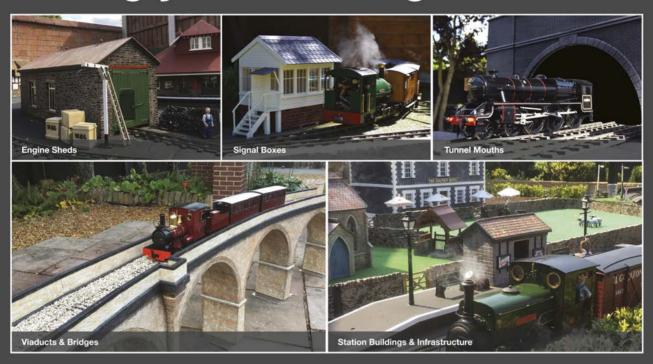
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Church Hill Swanage

We are often told to model what we see. Stephen Wise has done just that with this stunning scene.



The south end of my line, the Swanage & Southern Light Railway (SSLR), makes a tight loop to go behind South Swanage Station back the way it came. I've always felt this isn't very realistic, so wanted a visual break to hide some or all of the loop.

On our daily exercise walks, we often go up or down Church Hill, which is a nice jumble of interesting cottages in a small space. I photographed the hill and decided to try and fit the bottom three cottages in a space going up a hill to end by a rock boulder. After measuring up the available space and working out the angles, it became clear I could only model 2/3rds of the 'larger' Georgian cottage.

I worked out a reasonable gradient of 1 in

8 for the road and drew upfront elevations on paper, using some existing resin doors and windows to map out suitable sized cottages, not being slavish copies of the real

For construction, I had some artist's foamboard for the inner cores and resin stone sheets from SLH Creative. I had some weathered tiles from Minarco and some real stone roofing tiles from Miniature Bricks. One of the features of Swanage is the use of heavy Purbeck stone for some roofs. The resin windows, doors and chimneys, which, whilst rather rough, could be tidied up.

The next, and possibly most important step was making a 3D-base upon which to build the cottages. I used foamboard to make platforms, which were separated

vertically and joined by risers, whilE joining them all at the front was the angled road.

Cutting this with a tenon saw, I cut a multi-section front along the horizontal lines below the windows allowing me to cut three sides of the windows with the big saw, then scoring and sawing with a razor saw and Stanley knife to then snap along the fourth side.

When cut out and dressed with a file, the three sections with the two windows and the door were assembled and glued. I added a back sheet of foamboard with the window spaces cut out and, once all the glue was dry, sprayed with Halfords grey primer before using enamel paints on the stonework, door and windows.

Once glazed, I fixed the front wall in place



The prototype scene.

and then added the exterior left side wall again from resin stone sheet mounted on foamboard. After this was in place, I built the interior rooms using foamboard, with painted floors and walls where they could be seen from outside. About three-quarters of the way to finishing the building, I realised I needed some lights. Fortunately, foamboard is easy to make holes in, so I threaded a set of warm white battery-powered lights through leaving the battery pack on the outside of the end wall hidden in a Plastikard lean-to utility box.

The cottage rears could have been made of resin stone sheets, but these are rather expensive and, as noted, relatively difficult to work. Instead, all are made from plastic stone sheets from GRS, which don't really look like Purbeck stone construction, but then the courses on the resin stone sheets are too big for Purbeck too, so neither is absolutely right. I used foamboard to make sub roofs as perfectly in line with the ends and side walls as I could and added sheets of very thin plastic sheet to make sure it was perfect before gluing on my stone tiles.

I then used my pack of real stone tiles to imitate Purbeck stone roofs, these look great, and used the entire pack of 25 sq. in - £18.50 worth on one roof. I tried to order some more for the second roof, but the company had closed for the emergency. I did a tot-up of likely costs; number 6 £55, number 7 £37 and number 8 £60, so around £150. Oh well, in for a penny etc., I then ordered some beautiful Georgian and Victorian windows from Jackson's Miniatures to make number 8 a bit special and another 1000 roof tiles from Minarco.

Construction of cottage number 7 presented no new challenges other than the tedium of tiling the roofs. There is some rear access using steps up between each cottage level, although this 'access' is only possible with a bit of walking along the side of the railway, but it's a light railway so that's OK!

With number 7 finished, I got some



Cottage Number 6 is trial fitted on site.

plaster dolls house roof tiles to complete number 6, which were good enough for the mostly hidden second roof. These were then painted to try and match the other roof.

House no. 8 was the trickiest as its roof faces front to back and it has fancier bigger doors and windows and a doored passageway access to number 7. This was very tricky as I needed a curved stone top to it, but with lots of cutting and some filling, I got there. The chimney for number 8 was a rather grander affair in resin from Eddy660r on eBay.

The roadway was surfaced using Jackson's Miniatures stone moulded plastic sheet and fronted with another resin/foamboard/resin sandwich wall, topped with plaster roof

Roof gutters are from GRS and these used upside down and painted orange are also used for the ridge tiles.

The building was then taken to the garden, fitted in on some Purbeck stone paving and set in place with mortar. A Thyme was planted in front of the hill to add some natural colour and a couple - Bob and Sally are now walking arm in arm on the hill.



The guv'nor comes to inspect progress.

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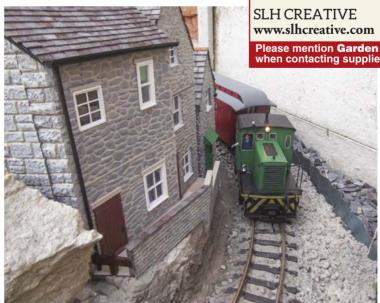
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The side tanks of "Elfin" are loaded with lead shot to aid adhesion, the boiler and fire box being hollow to permit the fitting of radio control.

Both models were developed around a simple battery replacement chassis for the old Hornby '0' gauge No. 1 clockwork mechanism, a side tank body of which Smallbrook's Michael Rayner had to hand.

He tells us that it seemed obvious to then utilise the same chassis for a small, simple and cheap 16mm battery loco but, as the design for 'Elfin' and then 'Sprite' developed, the little replacement mechanism proved not to be up to the job and he had to design a new, far more robust chassis for the task.

The chassis and the kits have been designed to be available for running on both 32mm and 45mm track and is available as a stand-alone kit.

Prices:

"Elfin" and "Sprite": £330 plus P&P complete with everything required except glue and paint.

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Elfin Mk2



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Last month's review of the GWR signal box kit missed the all important ordering details.

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£50 to £80 in Plywood









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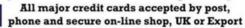
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The loco opposite is a loco used on the Arnold quarries in Leighton Buzzard Light Railway for the extraction of sand and gravelthe kit is all metal construction available in 32 mm or 45 mm gauges Arnold No7 20/28 simplex Loco Kit £100.00

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"Talyllyn", a new 16mm steam loco from Bowande

David Pinniger puts the new model through its paces.



owande is a name that may be new to many 16mm scale modellers, but is much better known in Gauge 1 circles. Over the last few years, Livesteam in the UK has developed a number of steam locos with Bowande in China. These include a Britannia, a Gresley A4, a Duchess, and the latest being a LSWR/C Southern M7 0-4-4T. The 0-4-2ST "Talyllyn" is the first venture into the world of narrow gauge, designed and developed in collaboration with the Train Department in the USA and built by Bowande in China.

They could not have picked a much more iconic narrow gauge loco than "Talyllyn", an engine that is one of the best known and oldest operating narrow gauge locomotives in the world. Built originally in 1864 as an 0-4-0ST by Fletcher Jennings of Whitehaven, it has been through many rebuilds and alterations in its long life. The model depicts the engine as running in

recent years and is available in the special "Talyllyn 150" red livery as well as the more familiar lined mid-green.

The engine that I was given to review was the first pre-production prototype loco, which had already been evaluated and tested by the Train Department's Jason Kovac before being shipped to the UK.

My first reaction on removing the locomotive from the box was "Wow! That is a lovely model." Although the Talyllyn 150 red is not my favourite colour for this engine, it does look very attractive with the black and white lining and decorated wheels.

A check with the drawing in James Boyd's "Talyllyn Railway" showed that all the key dimensions were pretty close to spot on and the complex curves of the cab and saddletank were very carefully reproduced. There is also a multitude of fine detail when you look closer at the loco.

However, in my opinion, a steam engine has to be a good runner as well as a good scale model, so I was keen to raise steam and put "Talyllyn" to the test on my garden railway. Instructions had been provided, and I read these carefully before proceeding.

Looking at the operational features of the loco, the first thing to notice is that, because of the complex shape of Talyllyn's cab, the roof is fixed in place, which limits access. On the RHS there is a small ½" pressure gauge, the gas control valve, disguised as a brake handle, and the reversing lever is in the front of the cab. The lever has three notches for reverse, mid gear and forward to operate full Stephenson valve gear. It is worthwhile having a good look under the engine when you lubricate the moving parts to see how well it is engineered.

On the LHS, there is a gauge glass and the regulator from the backhead.

Inside the front top of the cab, there is



LHS of cab showing sight glass and regulator

a large cylindrical gas tank, which is very visible from the side. For people who do not want this visible intrusion, "Talyllyn" is offered with a much smaller gas tank hidden in the LHS coal bunker in front of the cab. but this is at a cost of a shorter run time. The lubricator is hidden very neatly inside the RHS coal bunker, with a removable toolbox to access the filler cap.

Moving forward, the water top up valve is nicely sited under the tank filler cap. The opening smokebox door is neatly secured by a small spring catch, but is quite tricky to open unless you have strong fingernails.

Now to the exciting bit of steaming up for the first time. It is vital to read the instructions as it clearly states to use a heavier grade 460 steam oil in the lubricator. I had to search around in the workshop for this as most people have switched to the lighter 220-grade steam oil for their recent engines. Fortunately, I had a bottle of heavier oil, which I use in my old Archangel meths-fired potboilers.

Light oil on the motion, water in the boiler, gas in the tank, oil in the lubricator and we are ready to light up. Open the smokebox door, crack the gas valve and apply the lighter flame. The lit gas popped back quickly with a gentle moan and then went quiet, although it was still alight. There is clearly a big difference between this ceramic burner and the usual gas pokers. At my age, hearing is not 100% and I realised that with my first run with "Talyllyn" that the gas setting was too high so that the safety valve was lifting very regularly. I soon

found that the setting was about right when it was almost inaudible.

Steam was raised very rapidly in 3-5 minutes and the safety valve lift was very positive around 40psi. I had filled the boiler to about 2/3rd on the gauge glass and condensed water was soon ejected when the loco was gently run backwards and forwards a few times. After one circuit of my main line to make sure everything was OK and to get a feel for the loco, "Talyllyn" was coupled up to my five vehicle TR heritage train of the three original Brown Marshalls, Lancaster No 4 and the iconic brakevan/ ticket office. I made these some years ago from Triassic laser-cut wood kits and they are quite heavy for four-wheelers. As I said earlier, initially I had the gas turned up too high and so I had to top up with water after 10 minutes and the gas ran out after 15.

The second run, with the gas turned way down, was much longer as I was not wasting gas or water. The performance at slow speeds was excellent with the loco occasionally stopping at the top of the bank and then gently restarting when the pressure had built up a little. I then tried the engine

on a different train of Glyn Valley granite wagons made from Binnie kits with loads of real granite. Performance was similar to the previous run until I tried to run the loco in reverse when the running was not as smooth. I discovered later that the fault was with me and not "Talyllyn" as I had not pulled the reversing lever fully back to engage with the notch.

Based on these three runs, I was very impressed with the performance of the engine and so on another day, I tried "Talyllyn" on a much heavier train of four FR/NWNGR coaches weighing in at 8 3/4 lbs (4kg). With a bit more regulator, the loco pulled this train with ease, even selfstarting on the bank. I expect "Talyllyn" would pull even heavier trains, but as the loco was not mine, I did not want to load it up anymore.

My good friend Steve Edwards was so impressed with this engine that he ordered a green one from the first production batch to arrive in the UK. I was very pleased when he brought the engine over to my line so that I could try out one of the production engines "straight out of the box". I have to admit



Side view of the production locomotive.



Hauling the heritage train.

Bowande "Talyllyn" locomotive specifications:

Gas fired boiler with ceramic burner and fine control valve

Two inside cylinders with fully-functioning Stephenson valve gear reversible from the cab. ENOTS/Goodall valve for refilling under steam. Gas tank in Cab with 25+ minutes capacity. Option to fit smaller gas tank in bunker for a neater appearance.

Three livery options - Talyllyn green, Furness Red or lined black.

Dimensions

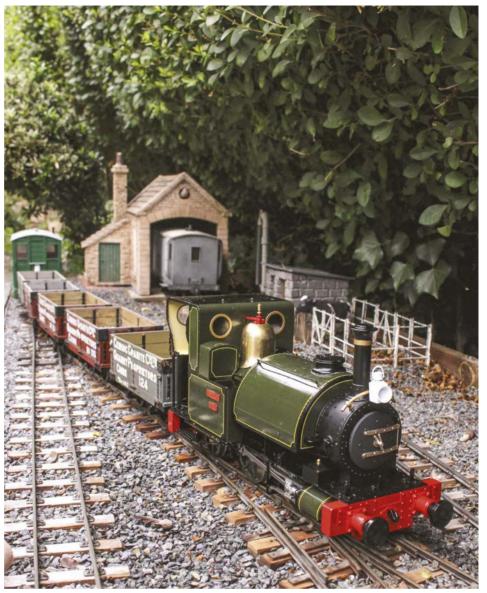
Length buffer to buffer - 280mm Height from rail - 130mm Width - 90mm



RHS of cab showing pressure gauge, gas regulator valve and reversing lever.

that I was totally smitten to see "Talyllyn" with a shiny brass dome and resplendent in the classic green livery edged with yellow and black.

Preparing and firing up was identical to the red loco and steam was soon raised to 40psi. We coupled the engine to a shorter heritage train of three TR vehicles and the ex-Corris van and it ran beautifully and smoothly for about 10 to 12 minutes. Performance then became more lumpy as if the engine was under-lubricated and so the run was stopped to investigate the cause. Sure enough, when we let the engine cool and checked the lubricator, all the oil had been used. On the next run, there was a small amount of oil left in the lubricator and after that, the consumption had settled down to match that of the red loco. It seems that the new engine needs more oil to coat all the bearing surfaces, but this reduces as



The production loco hauls the GVT wagon test train.

the loco is run in.

It was really informative to be able to test both the pre-production engine, which had done a fair amount of running and also a loco from the production batch, which is what the customer will receive. I was very impressed with "Talyllyn", it is a beautiful looking engine with exemplary performance for such a small loco.

I have only a few reservations. Visually I can see that some people would not like the rather obtrusive cylindrical gas tank and it is a pity that rectangular tank had not been used. However, there is the option of a smaller tank in the bunker. I did find that on my ground-level line, the controls were tricky to operate as the cab is small without a lifting roof. I did note that the production loco had a larger handle on the gas valve, which made it easier to adjust than the one on the red engine. The green engine also had the pressure gauge facing the LHS, which was much easier to see on my line. When the regulator was fully open on a heavy train, it was difficult to pull back the handle without burning your finger on the bottom of the sight glass. It is essential

to be aware that the ceramic burner is very quiet in operation and must be turned down to avoid overheating and damage to the paintwork. It is also very important to follow the instructions with regard to the use of 460 lubricating oil and carefully check the oil consumption for the first few

Thanks to Simon Colbeck for lending me the red engine, Steve for letting me run his green "Talyllyn", and a big thumbs up for Livesteam, The Train Department and Bowande for producing such a delightful and iconic 16mm steam loco.

Garden Rail Resource

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Hornby/Lionel Trains "Hogwarts Express" train set

Hufflepuff Ben Bucki heads down to platform 9 3/4 to catch the train to school.

hile something of a fan of Harry Potter, I'm also the foster-dad of three girls who've found the stories a great gateway to reading. So, when Hornby announced a child-friendly train set of the Hogwarts Express in the garden scales, I knew I'd have to get one.

A few items need to be addressed; firstly, this is actually by famed American toy-train makers Lionel. Hornby simply imports the sets, so if you're expecting a comprehensive range in UK model shops, or even Hornby build-quality/detailing, you'll likely be disappointed.

Secondly, but perhaps most importantly, this set isn't actually G gauge, despite being advertised as such in some places. Having chatted with some garden

railroaders stateside, it seems Lionel used to produce a 'proper' 45mm-gauge toy of the Hogwarts Express, but this is not that set. To create further confusion, it contains many common parts and even looks nearidentical. This set belongs in Lionel's 'Ready to Play' range, a collection of mostly USoutline stock.

This seems to be because Lionel didn't want their trains running on sets made by competitors; reportedly, the new RTP sets are marginally smaller than the former G gauge versions, but bizarrely, now run on wider tracks.

Judging by the carriage door sizes, the bodies are more Gauge One...ish.

Interestingly, the outer postage cardboard box was clearly marked "G Gauge

Hogwarts Express", which is probably what has contributed to the confusion over the exact track gauge in a few UK adverts. (Editor: Hornby issued a note to the trade clearing this up, but some adverts appeared before this reached them.)

This is definitely a toy, and not a model - albeit a good toy, and a pretty reasonable representation of the prototype. I cannot remember the last time I saw an internationally-produced, garden-sized toy train that wasn't an American 'old timer' or generic Germanic loco, so a British prototype makes a pleasant change.

I've seen some comments online from modellers who seem to be disappointed this isn't a mm-perfect GWR loco, but I think if you can park those expectations



The contents of the Hogwarts train set.

and treat this like the toy it is, aimed at Potter fans rather than railway enthusiasts, you'll be a happier bunny or moderatelycheerful phoenix (or magical creature of your choice).

First impressions

Starting with the good stuff - the locomotive itself. It reminds me of 60's Triang; simplified for robustness, with some dimensional compression, but an appealing loco nevertheless, capturing the character of No.5972 with both loco and tender having lots of rivet and surface detailing.

A concession to making this robust enough for outdoor running/handling by youngsters is the somewhat flexible motion gear. I do worry a bit for the long-term survival of this. The wheels are on the chunky side, with flangeless centre drivers to allow it to negotiate tight curves.

The coaches are a tad more disappointing; short, squat, with no interiors. Moulded in coloured plastic, they're pastiches of Mark 1 stock, but for all the simplification there are some unexpected touches such as representations of TOPS panels on the ends. I know of at least one modeller who is attempting to do cut-n-shuts of these coaches, as the body profile looks reasonable.

For me, the most disappointing aspect is the track. Comparing it to LGB is perhaps unfair, but even compared to other toy tracks, Playmobil, Echo, Newray, etc. this appears flimsy and lightweight, though at least it didn't warp or soften in an afternoon of direct sunlight. The lengths of the track pieces are ridiculously short, and it made for time-consuming assembly and packing away.

And that's it, barring the handset. A chunky dial controls forward and backward speeds and three buttons work the chime whistle more suited to an A4 pacific, but is nevertheless accurate for the film. The distinctly American bell points to the US parentage of the sets, and the middle button plays some slightly fuzzy-sounding dialogue from the first film. There's also a good general soundtrack of sounds that run from the moment the loco is switched on; hissing and clanking when stationary then chuffing that picks up speed as the loco accelerates -



Laid out on the lawn, the set under test from some discerning enthusiasts.

it's just a pity it can't be turned off.

The R/C is very responsive, with a range of about 40 feet (line of sight), and given the relative cheapness, I was expecting it to rocket along, but it's surprisingly smooth and controllable. The motor was initially a little noisy, with a high-pitched whine that seemed to settle down in service.

Testina

The box says 4+, so I recruited my two younger Potter-mad foster daughters, aged 8 and 10, for an enthusiastic bit of play-testing. The youngest struggled a bit assembling the track, though the elder child did better at this, and railing the train. Tension-lock couplings are body mounted and rotate to cope with the curves, but there's no springing to re-centre them, making the stock a little tricky to pair-up.

Both kids loved playing with the set, taking to the controls quickly and easily. Considering there's no figures or buildings, and just an oval of track, they had a good time driving it and playing with the sounds. My 8-year-old, in particular, loved the sound effects and had a good giggle at the film clips. Her only negative comment about the loco was that it "would be good if it smoked and steamed". The set underwent a full afternoon of play with no mishaps, and I got the kids to dismantle and rebuild the circuit, running the train at all sorts of speeds in both directions.

Conclusions

I know I've mentioned a few negatives, but I have to say, we thoroughly enjoyed this set. You'll be happiest if you accept this isn't a model, but the sort of toy set that will sell by the truck-load to fans at the gift shop of the Harry Potter Studio Tour. Hornby is, at the end of the day, a toy company. This is

a rather nice toy they've chosen to import, and I suspect it will be a canny move for them.

With the demise of the Playmobil Train range, there's a gap in the market for this sort of set, though I'll admit the LGB starter/junior range is more flexible in terms of expansion. That leads back to the elephant in the room (or Hippogriff in the Astronomy Tower) of the non - G gauge track. I can see some people buying this and being disappointed. That said, I've had a look inside the loco, and re-gauging it should be relatively simple. I'll cover this in a future article. Hopefully then a nice train will result that can be run on a garden layout, either for the entertainment of youngsters who might have outgrown Thomas or just for those like me, who grew up with the books and films and always wanted their own Hogwarts Express.

Editor: There have been a few people suggesting that this is the first Gauge 2 RTR train set. If you wished to expand your system, the Lionel website shows a set of left and right-hand points with an RRP of \$9.99. Plain track is also available. There are a number of other sets including a Thomas one. This leads me to wonder if anyone has built a "Ready to Play" garden railway? ■







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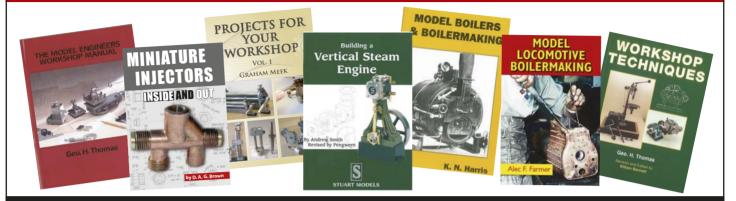
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Letters are welcomed on any aspect of large scale railway modelling. Please e-mail the Editor: phil.parker@warnersgroup.co.uk or post to The Editor, Garden Rail Magazine, Warners Group Publications, West Street, Bourne, Lincolnshire, PE10 9PH

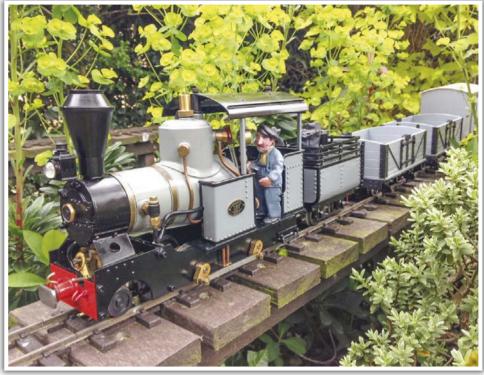
FILCRIS

My railway is built on a gentle slope within a small walled garden. Like Colin (Letters -GR July 2020), I chose to use Filcris but my experience seems to have been rather more favourable.

Again, the track bed was constructed using the Filcris ladder system. All of the sharper radius curves were constructed on formers made from some spare plywood. The completed ladder frame was then fixed to Filcris posts, which had been driven directly into the ground. Larger radius curves were built in situ, curving one frame section at a time.

My treatment of the top surface does differ from Colin's, though. I obtained some long Filcris planks approx. 2 1/2 inches by 3/4 inch. They were sawn into the appropriate lengths and screwed to the top of the ladder frame. I used stainless steel screws throughout to keep maintenance to





The railway has been down for over three years now and has shown absolutely no movement of the track bed. It does not seem to have warped, sagged, shrunk, or distorted at all. This might be because my garden is not only sheltered but shaded by mature trees, so does not suffer from extremes of temperature. It might be because the top surface is more substantial.

use the same system for the extension I am planning. It certainly has proved to be maintenance-free - a wash every three or four months with a pressure washer leaves it looking brand new. I hasten to add that I have no connection with Filcris other than as a very satisfied customer.



Paul Howard

LOCKDOWN TRAM MODELLING

It's amazing how much modelling you can achieve in three months if you can not go out during lockdown.

John Perkin





THE MULTI-SKILLED **ENTHUSIAST**

My son (age 60) and myself (81) are currently involved in putting two garden railway systems into our large garden made up of a pair of medieval burgage plots. One railway is of G45 gauge and the other of SM32.

We are both members of several societies, subscribe to several magazines, and like to think we are both "well read" on the subject. Because of this, we seem to be the "person to ask" at the club we attend.

Now, we are the first to acknowledge that most information is obtained by reading articles published in the aforementioned mags, but during a conversation over the garden fence with our neighbour, we were asked, "Is there nothing you two will not have a go at?"

I stopped to think about just what he was getting at. Have you fellow enthusiasts ever considered just what this hobby of ours gets us all involved in?

You have a plot of land, an idea festering

in the back of your mind, then away you

First, you are a surveyor, then a draftsman, followed by a planner and designer. Next, you are a quantity surveyor and an accountant.

Then you become a geologist and landscape engineer. At one stage we found ourselves digging through the foundations of an old greenhouse so add archaeologist to your list. This is swiftly followed by someone demanding a pond just there – so now add hydrologist and plumber.

Turn round twice and, before you've run a train, you're looking into the gardening bit, and everything that involves, brand name horticulturalist!

Next comes general builder and bricklayer. Time to put your railway hat on and lay some track, but hang on, is geometry something you learnt at school, or is it a

If your trains are to run with track power then be prepared to be an electrician.

Once trains are running, you think

you've finished. Wrong, there's more to come. If you've built a line with stations, passing loops, a branch line and a siding or two, you now have to consider timetabling, to say nothing of being a station master, driver, guard and signalman.

Then, on the side you have open days, so you now have to be a host and a caterer, without getting involved as an insurance assessor or health & safety advisor.

But further to all that, if you build your engines and rolling stock, then you are likely to be a metal worker. As for kit building there's a knowledge of plastics required, including several different types of resins, woodworking, painting and even sign-writing.

We'll take it for granted you have a chemist knowledge of the half dozen or more adhesives lurking on your workbench, and we had best not mention soldering or brazing!

And it sounds like such a simple hobby...

Mike Thornhill

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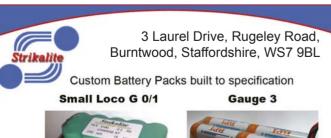
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DIARY DATES

Date: 14 November 2020

Event: National Garden railway Show

Venue: Peterborough Arena, East of England Showground, Peterbor-

ough PE2 6XE

Times: 10am to 5pm
Admission: £12.50 on the door (under 18's and carers admitted free),

however buying in advance will save you £2.00 per ticket. **Organiser:** The Association of 16mm Narrow Gauge Modellers

Web: www.nationalgardenrailwayshow.org.uk

Additional Info: 19 layouts, in scales including 16mm to the foot, 7/8ths, 7mm narrow gauge, G, G1 and G3 running a mixture of live steam and electric powered stock. 100 trade stands including suppliers you simply don't see anywhere else as well as major manufacturers launching new products, information stands and heritage railways. Model of the Year Competition, Member to Member secondhand sales and lots more.

Date: 15 May 2021

Event: Llangollen Garden Railway Festival

Venue: Llangollen Royal International Pavilion, LL20 8SW

Times: 10am to 4:30pm

Admission: £7. Accompanied children under 16 free.

Web: www.lgrf.co.uk

Additional info: 10 layouts, over 50 traders, heritage railway displays and modelling associations information stands. Free car parking for 300 cars, Cafe and separate Bar. Flat site with Disabled toilets available.

All events are published in good faith.

In light of current events, please check with the organisers before travelling a significant distance as **Garden Rail** can't be responsible for changes or cancellations. Please be aware that travel restrictions issued by the Government may also impact your journey. To submit an event for publication, please e-mail phil.parker@warnersgroup.co.uk.

SUBMISSION NOTES

Garden Rail welcomes articles submitted via posted disc, e-mail, Dropbox (or other large file sending systems online). Please ensure that your name, e-mail address, telephone number and postal address for payment on publication are included. Send to: phil.parker@warnersgroup.co.uk or to the contact address on the Contents page.

Articles should be submitted in MS Word or other word processing format. Please do not use fancy formatting or embed photos in the piece, these should be sent separately at the highest resolution possible and in JPEG format. Printed photos of a historic nature will be accepted. Captions for all photos should be included as part of the submission. You must own copyright to any material submitted and not have submitted it to other publications.



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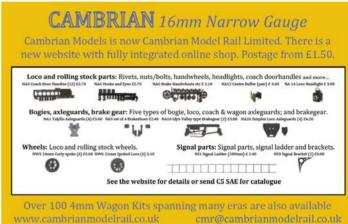


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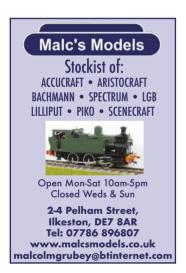
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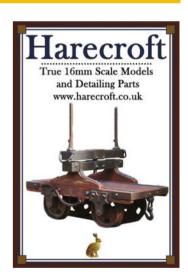


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Level Crossing the garden path

Graham Austin makes his line scooter-proof.

The path was always going to be a problem. A lift-out bridge further up the garden crossed it once, but the bridge is very low. You can step over it, but it's in the way when grandchildren want to bomb up and down the path on a scooter. When extending the line, having a second bridge would mean I couldn't run trains while we had visitors or it would be constantly up and down.

I wondered if a level crossing would be possible, but was a little worried that to get down to path level would involve a gradient of 1 in 25. Luckily, I've since found this is no problem for the trains I run.

The slabs used for the path were thankfully level side to side. So, once I had committed myself by laying the track either side of it, out came the angle grinder. I had lined up the edge of the sleepers with the edge of a slab so cut a parallel straight line just over the width of the sleepers.

Rail height needs to be slightly above path height to allow for loco pick up shoes, but not so much you trip over it. I worked out the depth then made several cuts across the width of the path and chiselled out the thin pieces. A 115mm diamond blade in the angle grinder allowed me to level out

the chisel cuts if I moved it gently side to side, ending up with a nice level cut out across the path.

Aristocraft rail was cut to length and the ends were drilled and tapped M2 for the joiner screws. The screws underneath securing the sleepers were also wired up for cross bonding. Sleepers were drilled out to take countersunk 1 1/2" screws and the slab drilled to take wall plugs to screw the track down.

Some AMS track had a slightly lower profile than the Aristocraft, so the centre of the crossing would be lower to allow any geared loco to pass over and not pick up debris. I cut this to length and then cut the sleepers either side of the chairs. I found the AMS sleepers would go between the Aristocraft sleepers and they would provide check rails when the middle was filled with cement.

I allowed an overscale gap for the flangeway then superglued the sleepers together. The Aristocraft rail was loose in the chairs, so the superglue was dribbled around them, too.

Shuttering to contain the cement at either end was made up using matchsticks and hotmelt glue. The glue also sealed

off any gaps between the sleepers in the flangeways to stop the cement from coming up and blocking them. A vacuum cleaner removed any dust.

Tape was run along the edge of the cut out so as not to stain the slab faces. A fairly stiff mix of 3 to 1 was made up of fine sand and cement, but first, the cut out was wetted with a dilute PVA. Then before the PVA mix had dried, a small filling knife was used to pack the mix in down the side of the outer rails, I forced it in until it worked itself under the rails. Then, I packed the mix in the centre between the rails.

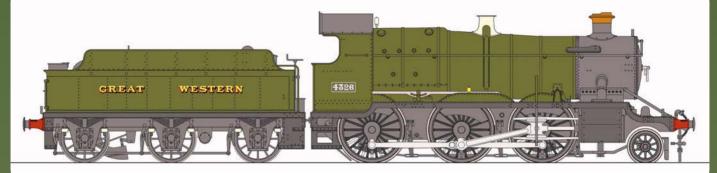
Flangeways were cleaned out and the cement levelled off with a knife. Later, the tape was removed, and any sharp edges rounded before the cement had gone off completely.

Three days later and the shuttering was gently removed and the flangeways cleaned out. The rails were cleaned, and trains were run successfully across the path. As a further test the following week I had a delivery of building blocks, which were put on a sack barrow and wheeled over the crossing, so I think it will stand up to the grandchildren and their ride-on toys.

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The GWR 43XX 2-6-0 'Moguls' were a product of Churchward's standardisation policy at Swindon and owe their origin to the 'family' of locomotives he developed at the beginning of the 20th century. The class was built in a series of batches from 1911 until 1923 with Collett adding further examples (with a side-window cab) between 1925 and 1932. In total 342 of these useful mixed traffic locomotives were built. Like any long-lived design, numerous details differed between batches including outside steam-pipes, ballast weights, experiments with oil-firing and the fitting of screw reverse to the Collett examples. The class served all over the Great Western system and 11 examples from the 53XX series were sent to France to serve with the Railways Operating Division (ROD) during WW1. During the 1930s class members were withdrawn and their wheels and motion parts used to create the 'Manors' and 'Granges', a process interrupted by WW2 after which British Railways started to scrap the entire class, the last examples being withdrawn in 1964. Luckily two survived, No. 5322, now at Didcot Railway Centre, and Collett example No. 9303 at the Severn Valley Railway.

The model is to 1:32 scale, gas-fired with a single flue boiler. Built to a similar formula as our very successful 61XX 2-6-2T, the chassis is constructed from stainless steel, the wheels are un-insulated. The boiler is copper, the cab and bodywork are constructed from etched brass. The gas tank is in a water bath in the tender. The model is designed to run round 4' 6" radius curves. We are aware that there were a large number of livery variations among members of the class and will therefore be offering the variants subject to order volume (full details on our website). The anticipated UK RRP is £2500.00 (subject to the usual provisos) and delivery is scheduled for Q1 2021.







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