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JULY 2023
ISSUE 347

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VIEW FROM THE END OF THE PLATFORM



Incorporating GARDEN RAILWAY
WORLD Issue 347 July 2023

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REUNITING WITH OLD FRIENDS

Sitting in the car at Llangollen show, enjoying some lunch, and the stunning weather, my peace and quiet was interrupted by a man shouting at me from the back of another vehicle. Normally, I would be a bit put out by this, but it turned out the timing of my lunch break was perfect.

My Peckett had been away at the steam locomotive hospital, and the shout was Dr Dave Mees returning it to my care. You see, I have been a bad locomotive owner. More details of my mistakes are on page 44. Let's just say I'm glad to have the little blue loco back.

Another reunion this month is with the ex-Cooper-Craft range of 16mm scale plastic wagon kits. These are now in the care of Cambrian Model Rail, and I've built some

of the first mouldings on page 16. This is poignant as these were the first kits I built for a garden railway, well over 30 years ago.

This prompted me to find my original models. Many years stuck on a box in the shed have not been kind to them, but with a bit of work, I'm sure I can restore the wagons to full health again.

A final word. With summer in full swing, and I'm sure everyone's gardens are looking lovely, how about taking a few photos for a Garden Rail feature? Send one to me – phil.parker@warnersgroup.co.uk – and we'll have a chat. Don't be modest, we need all sorts of layouts for our pages. If you've built it, others will want to know how!



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1:20.3 Scale 13-2 Class A Shay The model will be gauge-adjustable for 32mm and 45mm and will come with two types of stack as typically supplied by Lima when built. To be available in black, planished iron or green with expected prices of £2145.00 ready to steam or £1995.00 as a kit. Order for Summer 2023.

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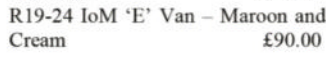
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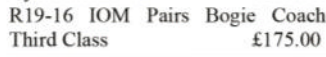
R19-10 IOM 4 wheel coach Maroon and cream £90.00



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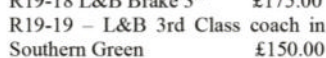
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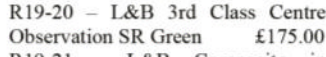
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The Greendale & Brownhill Railway

Rupert Conner has built not so much 'an 0 scale' railway, more 'a no scale' railway.



1967 – the author shows an early interest in 0 gauge in the garden. This 'Percy the small engine' set was the end of the long line of Hornby/Meccano clockwork 0 gauge products.

At the Greendale and Brownhill Railway, we are happy to run anything that works on our 'dead rail' 32 and 45mm gauge track. This means it is really two railways in one. We have aimed to make the railway and garden a pleasing backdrop for whatever trains are in action by building structures that look acceptable (to our eyes), whether the railway is being operated in 'standard gauge' (0 gauge) format, or as a 'narrow gauge' (larger scale) railway. Construction started during the first coronavirus lockdown in 2020, using materials we had to hand. 'We' being: myself, the civil engineer who builds the track bed and creates the hard landscaping; my wife Karen, who is the horticulturist; and our son, Ruari, who is our Chief Mechanical and Electronic Engineer.

The inspiration for the line was a 'Green-

dale Rocket' toy that we saw in a discount store. Karen and I thought this could be converted into an attractive battery-powered train to run a garden railway. We were soon to discover others had already had the same idea, so in order to create something a little different, I later developed our version into a double Fairlie.

As my thoughts turned to making it remote-controlled, Ruari suggested creating an App to control trains from any device that has a web browser via WiFi. He originally had this idea back in 2016 for remote shunting of 7 1/4 inch gauge locomotives on Karen's Little Railway - our other garden line. He developed it for our use in small scale locomotives at about the same time as a commercial system was marketed. Our version is used in our electric locos as it has some extra features, including the ability to

output DCC signals, and it's cheaper for us to make compared to buying a ready-made item.

The railway was originally built as a single track dumb-bell, where a length of single track joins two return loops, with a ruling gradient of 1 in 100. This trackplan had the merit that each time a train entered a loop it was sent around it in the opposite direction. The points were automatically set by the train pushing the blades across as it trailed through the points each time it exited a loop.

Later, we rebuilt the track as a double track dumb-bell, effectively a continuous run or misshapen oval, meaning trains can now tail-chase each other. The gradient was removed to make the whole line level (says he, casually dismissing breaking up and lowering half the line, and adding yet more

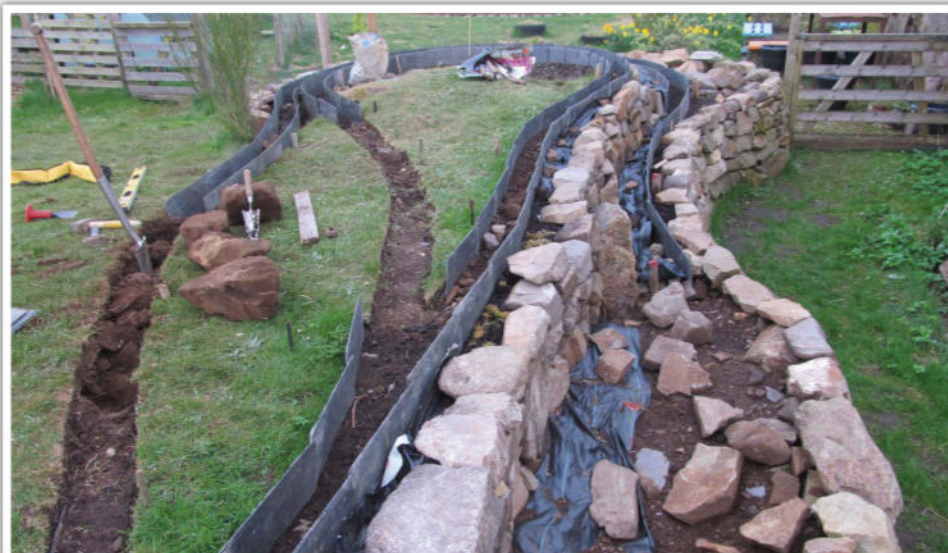
concrete to raise the other end) to better suit our growing collection of unregulated vintage live steamers.

Building the GBR was seen as an opportunity to develop a neglected area of garden. The site chosen allowed the railway to follow the top of what was a scrubby bank, which joined onto an overgrown wall, meaning one side of the railway would be at ground level and the other side would be at a convenient height for operating trains. The route was mapped out using the garden hose as a means of visualising satisfying curves. The track bed is concrete, cast in a shallow trench between two lines of slates that were used as shuttering, which was left in place to retain the ballast whilst forming a visually appealing separation between railway and garden.

Digging the route and contouring the garden provided plenty of rockery-sized stones, so the ground was covered with weed suppressant and the rocks used to create a 'mountain' and other rocky outcrops. Any remaining areas of bare ground were covered with 20mm crushed local stone, which is what we use as ballast on our bigger railway, and was 'borrowed' from there.

When the lockdown rules eased, we bought alpines, succulents and other hardy spreading plants from a local bargain store. Karen planted these in pockets of fresh compost among the stones, which soon spread to create a scenic landscape for the railway to run through. She has a knack for spotting clearance bargains that just need a little care to rejuvenate and/or can be split into several smaller plants.

The track for the original dumb-bell is traditionally built using brass bullhead rail, white metal chairs, mainly Bassett Lowke, and wooden sleepers, which are fixed on wooden battens on straights and around sharp curves. We had a supply of this that had been stored for about 15 years since being used to build a previous garden railway, by which time it was at least third-hand, having been acquired by my Dad second-hand in the late 1970s. This type of track can look good, especially if you space the sleepers closer together than the original manufacturers (Bassett Lowke, Leeds, etc.) recommended, and if you are lucky, components can be picked up relatively cheaply. Future track will be a little different due to the bulk purchase of some flat bottom rail, which will be pinned directly onto wooden sleepers cut from planks using a band saw. Both these methods of track construction are labour



Early May 2020 – The early stages of construction. A shallow trench is dug and the sides are lined with slates. Plenty of rocks have already been unearthed and re-used to build the upper retaining wall. More would soon be unearthed and used to build the mountain. Part of our other garden railway, the 7 ¼ inch gauge 'Karen's Little Railway', can be seen in the background.



Bridge construction. The main structure is a welded framework of the 30 x 12mm steel bar we use as rail on our 7 ¼ inch gauge railway. At this stage, the metal T-shaped supports are concreted into the ground prior to being encased in cast concrete to form the abutments at each end of the bridge. Much later, a couple of metal trestle supports would be added to improve the look of the bridge, but they are completely unnecessary structurally.



By Autumn 2022, the mountain dumb-bell had been relaid to make it level. The planting is now looking well established.



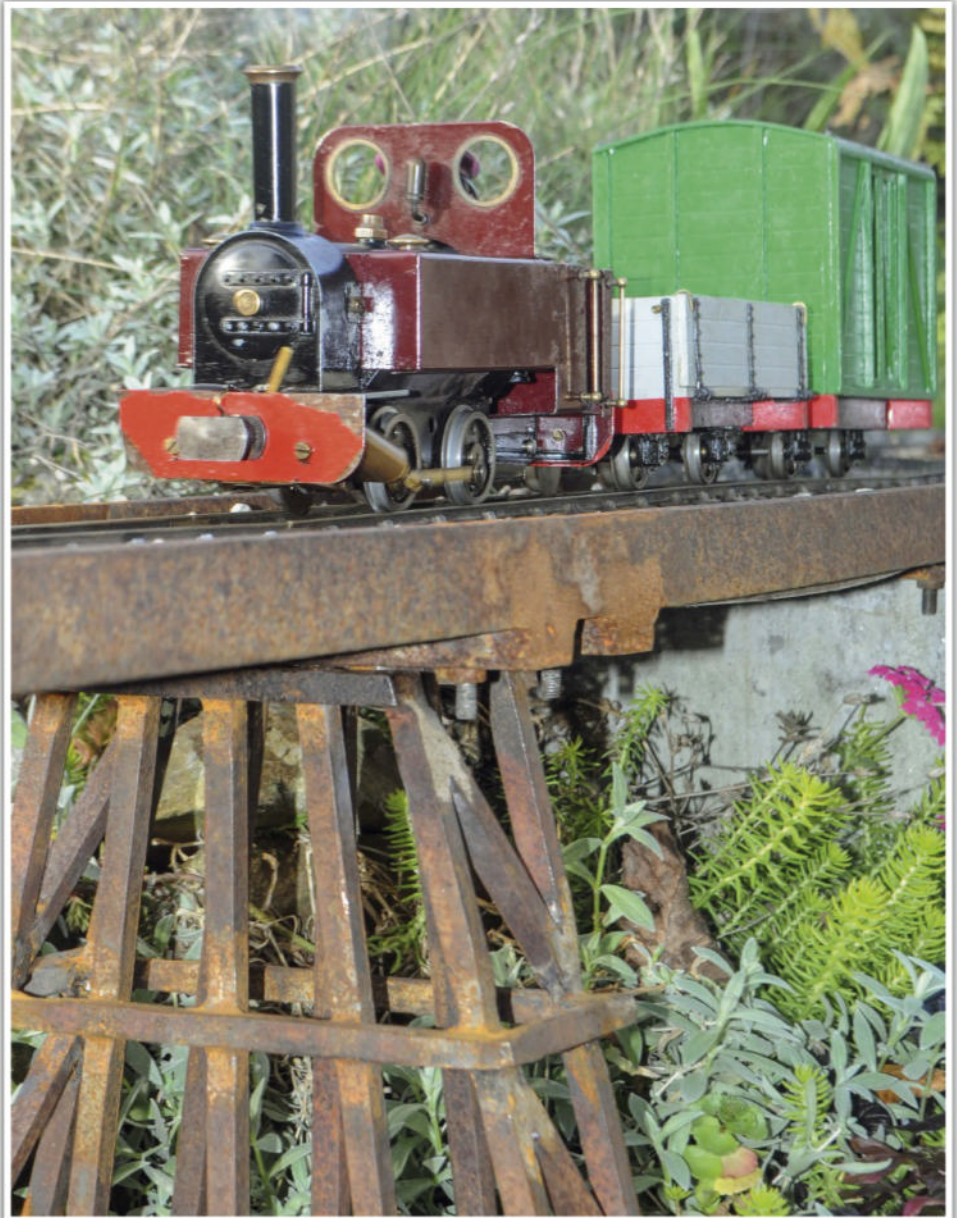
June 2020 - The first train had to be hauled by the 'Greendale Rocket', quickly modified by fitting the body onto an I.P. Engineering chassis, with the control gear hastily stuffed into the cab. The only track laid was the short link between the two loops, so the home-designed and built WiFi remote control was a bonus.

intensive, but curiously satisfying.

Why is the 'Greendale and Brownhill Railway' so called? Greendale is the fictitious village where the long-running children's television series 'Postman Pat' is based, home to the 'Greendale Rocket' locomotive that inspired the building of the railway. Brownhill is where we live, so the seemingly prosaic name neatly links fiction to reality. Our varied fleet bears no resemblance to any particular railway company, so we've decided the GBR is best regarded as a preserved railway. Maybe that should read railways, depending on what scale is being used on any particular day – as well as our own 0 gauge, 16mm and G scale stock, we've had 7/8ths scale visitors, too.

Like the full-size heritage railways, we have a selection of vintage rolling stock 'preserved' in various conditions, and unlike most of them we also have several 'new builds'. We try to ensure everything works and is used, rather than being kept as static pristine condition museum pieces. This sometimes means a small degree of usually reversible modification, often to facilitate the use of modern technology, such as the WiFi control system, or to improve running. It's a lot cheaper to buy items that are maybe a bit battered and less attractive to collectors, and spend time rather than money on (re)building things (such as the track), rather than buying new.

By combining modern and traditional technologies and continuing to learn new skills, we hope to develop the railway further without spending as much as we would have to if buying ready-made items. Learning computer aided design skills and 3D printing has opened up a whole world of extra possibilities, as did learning to weld. We are gradually trying to teach



Narrow gauge oscillator, IP Engineering 'Jane' crosses the valley.



Hornby O gauge 4-4-0 hauls a train of tinplate wagons over the viaduct.

ourselves the skills needed to build live steam locomotives, though that is still a fairly distant goal.

There are lots of plans for the future expansion of the railway, which have started with a steeply graded mixed gauge branch line that leads down towards the site for a terminus. Building mixed gauge points and a turntable will be quite a challenge, not to mention our ideas for locomotive building, signalling, somewhere for trains to go to at the other end of the line...I could go on. For now, I hope the accompanying pictures and captions tell the story to date better than my words can. ■

Garden Rail Resource

The GBR has a You Tube channel at <https://www.youtube.com/@gbrailway>

Our 7 1/4 inch gauge garden railway Karen's Little Railway, has a website at www.karenslittlerailway.co.uk Visitors are welcome by appointment. We are located in north east Scotland and can be contacted via the 'contact us' page on the website.

The book, *7mm Live Steam – The Eddie Cooke Articles*, is published by the Gauge 0 Guild Ltd and is available from their website. ISBN 0-9503217-05-4

Files for 3D printing the 16mm scale Simplex locomotive design by Dave Watkins can be found at www.thingiverse.com/thing:4844519.

Details for building the Gauge 1 version of the Crocodile locomotive can be found at www.thingiverse.com/thing:3611825

Please mention Garden Rail when contacting suppliers.



Dating from 1966, the Tri-ang Big Big train 'Blue Flyer' takes some somewhat older tinplate stock around the loop.



The 3D-printed Swiss Crocodile passes by our miniature model of the alps.



Another 3D-printed model, this time a wartime Simplex. Details for downloading the parts for this can be found in the *Garden Rail Resource* box.

Live steam Bassett Lowke 'Enterprise' on passenger duties.



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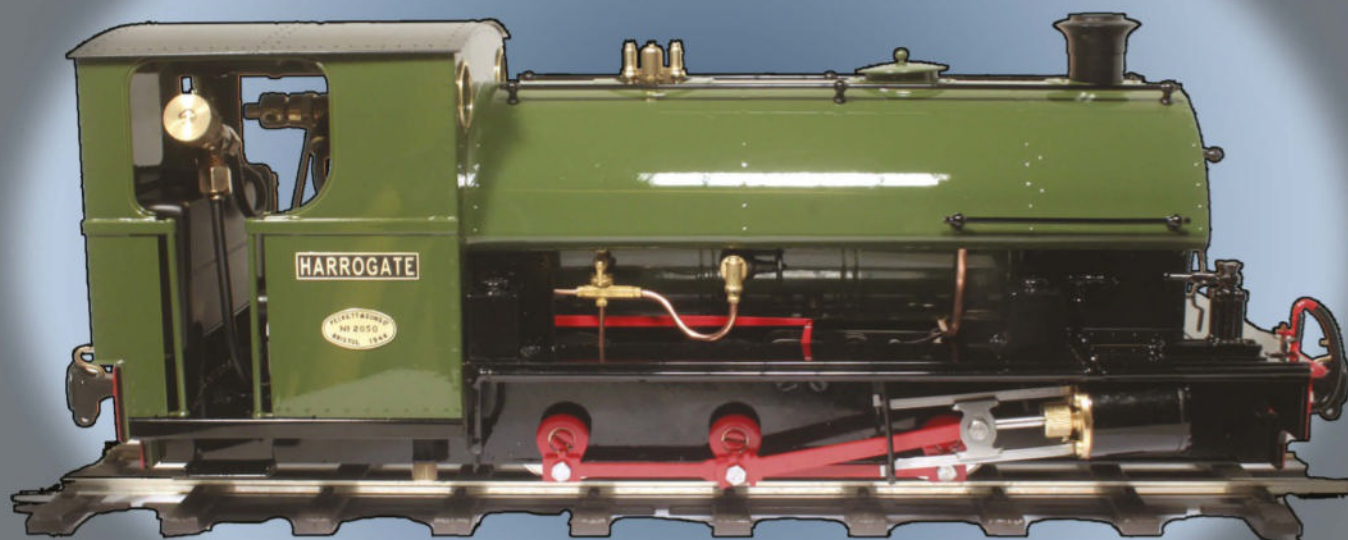
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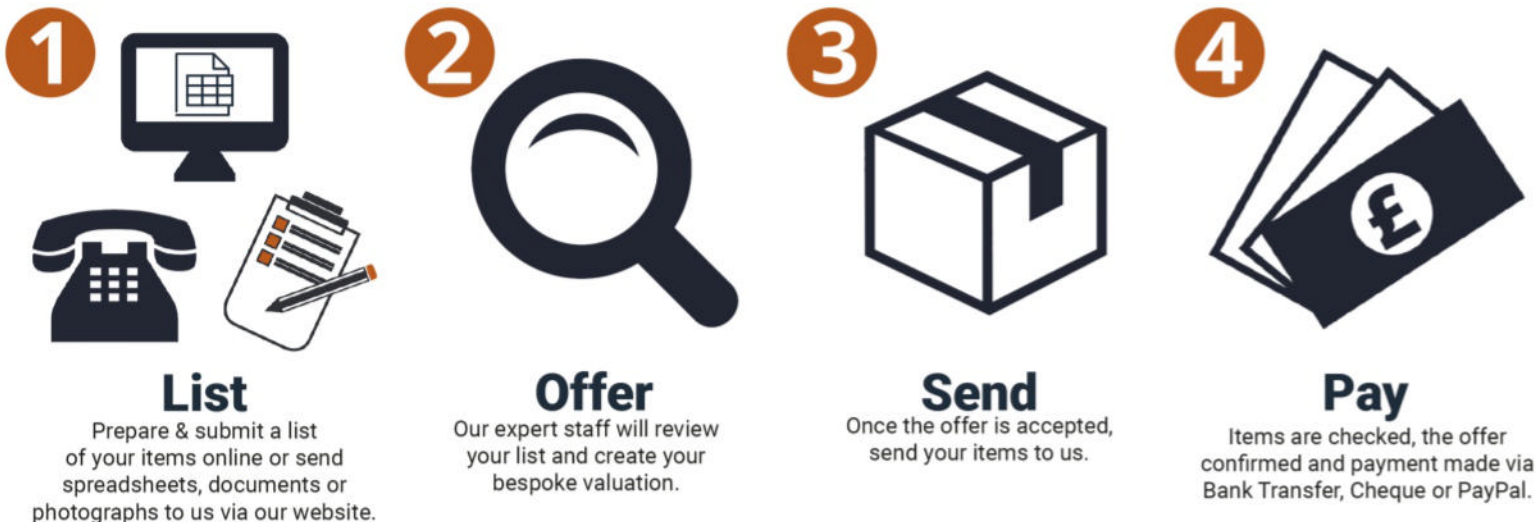
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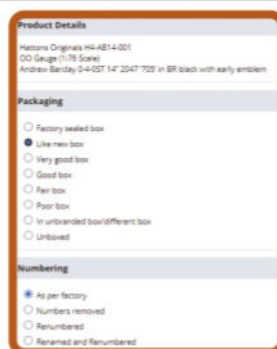
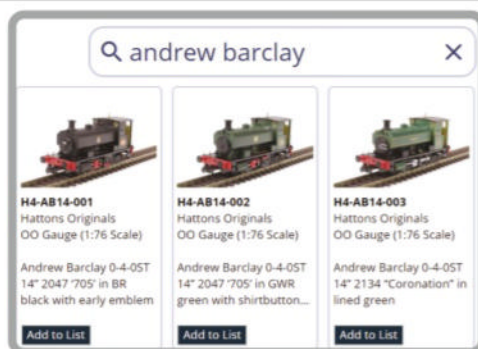


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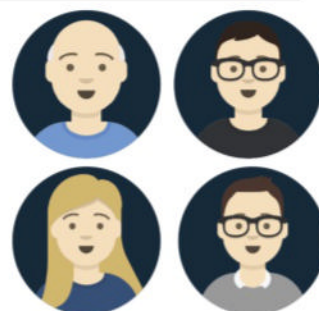
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GWR Water Tank

Mark Thatcher showcases another 3D-Printable Model from John Candy for Gauge 3 and G scale modellers.



The ubiquitous water tank is surely one of the mainstay features for any lineside of a garden railway. Even for some of us who prefer to model more modern image prototypes, there is no excuse not to have a water tower situated somewhere and, perhaps, falling into disrepair. John has once again presented us with an option to do this, for those who have access to a 3D printer.

Just as with his telephone boxes and newsstand last month, this article provides a link to all the files you will need to grab to create your own 3D-printed model. Incidentally, John uses a Snapmaker 2.0 A350 printer with PLA filament.



If you model an open-top tank, a detailed float valve is included. The modeller has to provide a base sheet of plastic, and this would benefit from a couple of coats of Yacht varnish to make it look watery.

The design of this water tower is of a typical GWR style that would be found at smaller loco sheds, stations and trackside locations. These were probably built from the late 19th Century onwards.

There are 11 STL files that provide the main elements and you will require 2mm brass wire or rod to make the bracing ties which form an 'X' pattern between the anchor lugs on the legs. The four ties on each elevation meet at a central, circular hub. You can use this wire for the valve float linkage, which is located inside the reservoir of the water tower also.

You will also require thick plastic card. John suggests a minimum thickness of

2mm and preferably thicker for Gauge 3 to form the base of the tank. You can also add some fine chain if you choose to add the external water gauge.

The supplied files produce an open-top tank with internal float valve. But many of these water towers were fitted with planked covers, which can easily be fashioned out of timber strip wood.

The model in the photos is finished in the standard GWR colours, light stone and dark stone. Realistic colours are available from Phoenix Precision Paints or Rail Match Paints, either in small tins or as spray paints. Actually, John mixed his own colours up from Humbrol enamel paints! ■



One thing we can't easily print is the chain for the water gauge, but this is readily available from the trade.



Another addition, should you feel the need, is a suitable G scale man to operate the valve.

Download the files

Each location contains both OpenScad (.scad) and .stl files, plus a ReadMe.txt file.

Follow the link below for each model and you will be presented with a PDF document with instructions. Within this document is the live hyperlink to enable you to download the component files (as a ZIP file). Simply click on the link and you will be taken to the right location. Simple!



GWR Water Tank: gauge3.info/gardenrail/GWRwater/instructions.pdf

Although the STL file downloads are to G-scale, files can be easily resized to any scale, see gauge3.info/gardenrail/rescalestl.pdf for guidance.

Watch out for the next item from John in the not-to-distant future: an L&NWR water column.



The return of Cooper-Craft

First produced in the 1990s, the Cooper-Craft range of 16mm scale wagons has been re-released by Cambrian Model Rail.

I'm pretty sure the very first garden scale wagon kits I ever built were from the Cooper-Craft range. Being plastic kits, they were within the abilities of someone capable of assembling an Airfix Spitfire, if not entirely suitable to run behind an untamed Mamod steam engine.

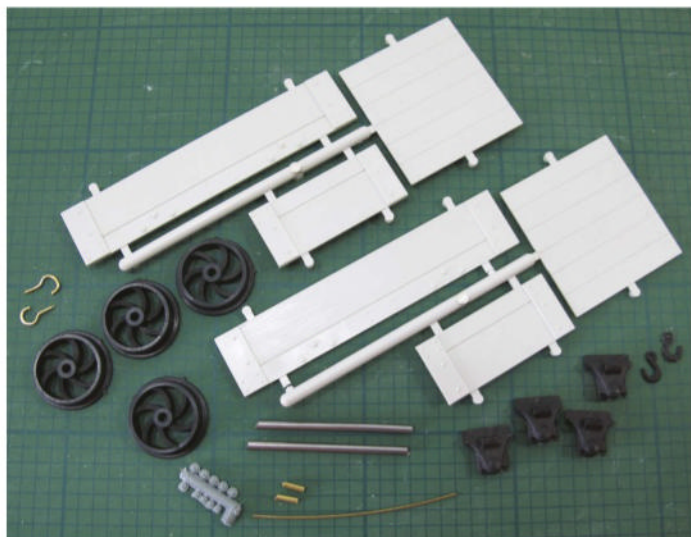
The sale of the range saw them unavailable for many years, but still much in demand judging by the prices both built and unbuilt models command on the second-hand market.

Now under the ownership of Cambrian Model Rail, these useful, and economic

wagon kits are now on sale. *Garden Rail* got hold of the first shots, so we could bring you a build as quickly as possible. Are these still as easy to assemble as the Editor remembers? ■

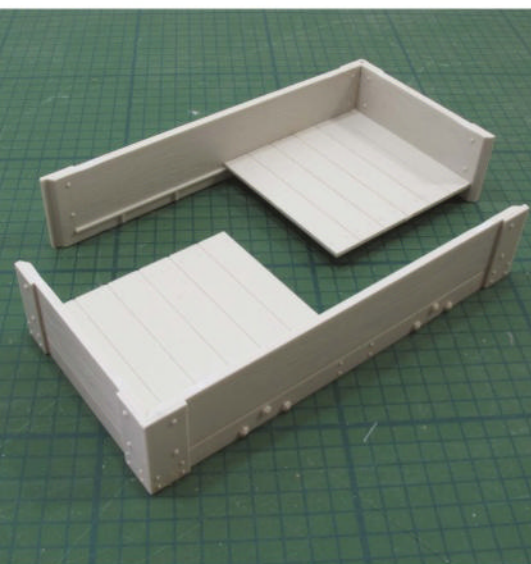
North Wales single plank wagon

We'll start with the single-plank wagon. All the range assemble in similar ways, so if we look at this in the detail, we only need to cover the differences with the others.



The body is supplied as a pair of identical plastic mouldings, containing a side, end and half the floor.

Binnie wheels, axleboxes and centre couplings replace the Cooper-Craft originals, due to the mould being worn out.



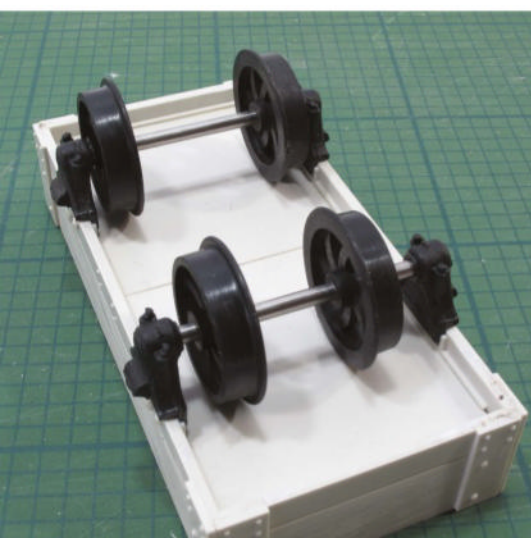
Plastic cement, I used Revell Contacta, and solvent (MEK-PAK) is perfect for assembling the wagon. The first step is to make up the to halves, which are then joined together. Ledges provide a positive location for the floor, and the corners are rebated to help the modeller. A little care at this stage, should ensure a square and flat wagon.



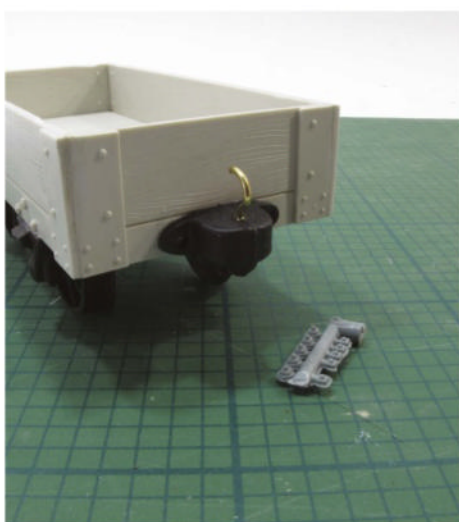
The Binnie wheels need any leftover lumps of moulding runner nipping off with a sharp knife. The clearance between the flange as the floor is best described as 'gnat's whisker' so any protrusions will stop the wheel rotating.



It's down to the modeller to trim the axles to length. I found 49mm worked well, but it doesn't seem that critical. A junior hacksaw will do the job, and then the ends should be smoothed and domed with a file. Check they revolve smoothly in the axlebox.



Fix the axleboxes two one side of the wagon, ensuring they are vertical and leave to dry. Do not let these lean in, even slightly, or you remove the clearance between flange and floor. I set the gauge once the wheel were fitted, sliding them along the axle.



Couplings fit on the ends, there are several options for the builder to choose from. If you are worried about these pulling off, use a pin through the side holes, although the Contacta glue seems to grab them well enough for normal use. The finishing touch is to cover the holes with the supplied decorative bolt heads.



Finally, a couple of strips of lead flashing are superglued under the floor to add a bit of weight. How much weight? Well, I've based this on a resin wagon kit, but does anyone have a set of guidelines?

Coupling options



There are three ways to mount the Camarthens couplings. The first is simply on the buffer beam with the hooks uppermost. You may need to remove a little moulding to have the unit sit snugly on the wagon. Coupling will be with chain, up to 1.7mm diameter.



The pragmatic option is to flip the coupling upside down, and fit the brass hook provided by drilling a small hole. This allows for the traditional 16mm scale bath plug chain coupling. I found it best to trim part of the hook away to make it easier to couple up, but it's certainly easy to use.



Scale fans will fit the correct drop-link coupling. A length of tube is fitted to the coupling block, and some wire bent to clip into this, on to which the plastic hook is slid. This is closest to the original Cooper Craft version of the coupling, and looks great at the price of being fiddly to use.

LNWR Coal Wagon



Following the opening of the LNWR standard gauge branch from Betws-y-Coed to Blaenau Ffestiniog in 1881, an exchange yard was built to the north of the station to make connection with Oakley and other quarries in the vicinity. To work the traffic from these quarries over the 2ft gauge line, Euston built a set of special wagons.

This kit is the Editor's favourite in the range, but sadly the mould has suffered a little over the years and there's quite a lot of flash to remove. This isn't a problem though, as it doesn't affect the detail, and can be quickly trimmed with a knife.

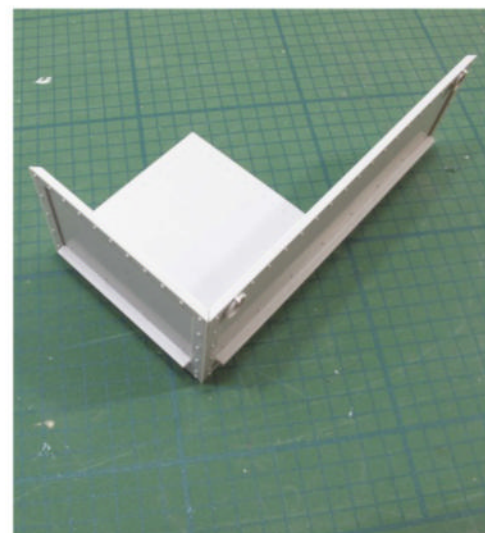
Assembly is the same as the single-plank wagon, although you need to check the bottom of the floor, where the orientation is marked so the rivets are lined up correctly.

Croesor Sheet Iron Wagon

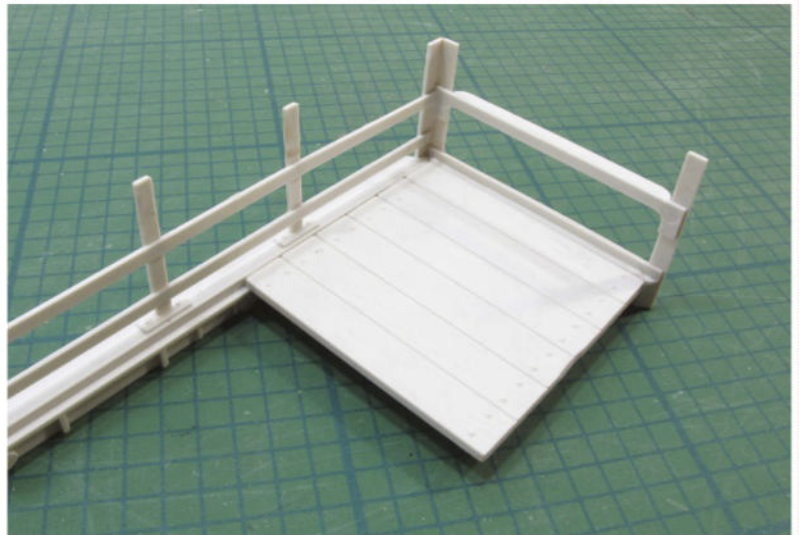


The prototype for this wagon comes from the Parc Quarries in the Croesor Valley. Iron wagons of this type were used to convey slate from the quarry face to the mills or cutting sheds, and then transfer the offcuts to the tips, still part of the Welsh landscape. To aid unloading, rings were fitted to the corners so the wagon could be lifted bodily from the track, and tipped. Wagons also found work carrying coal, sand and ballast, making it a useful model for any garden line.

The biggest difference in this build are the corners, which are chamfered to provide a neat appearance. This requires a tiny bit more care than those models with rebated corners to get a tidy joint, but the positive floor location helps make this reasonably easy. One improvement would be to gently scrape the moulded rings away, and replace them with parts bent up from metal, a fiddly job but it would look better.



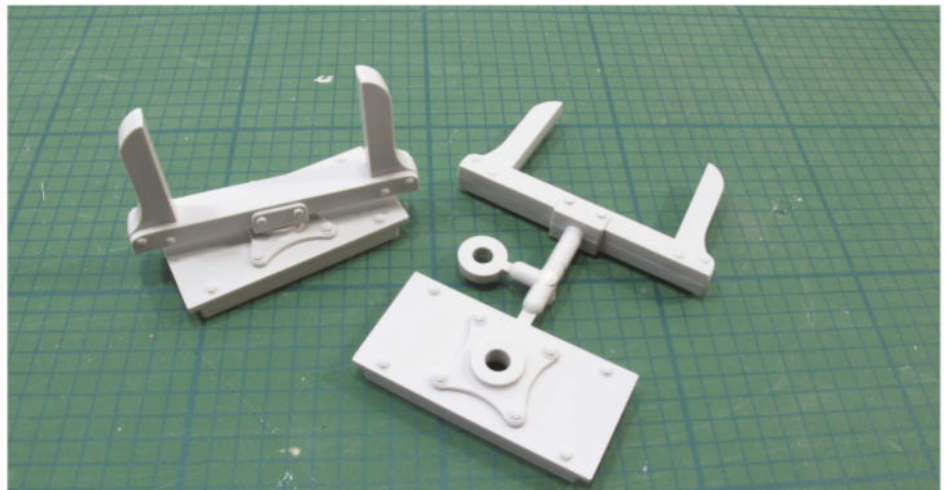
Ffestiniog Railway Slate Wagon



The North Wales slate wagon was the most numerous narrow gauge piece of rolling stock in Britain. The FR had 1095 of them on the books, and most other quarry systems had something similar. Early wagons were wooden, but these gave way to the iron version modelled. Floors were metal, but prone to rust through and so replaced with wood. Either can be modelled by simply flipping the floor parts over to reveal, or hide the planks.

The open nature of this wagon means there's not a lot of 'meat' in the corners to join the parts, but helped by some nice positive location aids, it's not hard to make a joint that looks like it's a single steel angle. A separate angle-iron hoop moulding drops into the top to finish the model. Once complete, this is a surprisingly strong model, despite the thinness of the plastic parts. All it needs is some moulded slate loads to fill it up.

Timber Bolster Wagons



Goods such as telegraph poles, lengths of timber, tree trucks etc. are carried on pairs of bolster wagons. Dave Sketchly took us through the details in the March issue of *Garden Rail*, suffice to say setting up a pair of bolsters is a little trickier than you might expect, but the space to hide some weight under the floor of these wagons, should make the modellers life a lot easier.

Construction is obviously the same as the standard single-plank, but with an additional moulding to provide the bolster itself. This sits on the wagon, and could be left un-glued so the model can be used in both guises. A little care with the glue is required to make the bolster itself – try not to stick the retaining washer to the plate, or the bolster won't swivel.

Conclusion

So, how do the reissued wagons measure up? Well, I built all six in a few hours one evening. Part fit is excellent, and the chunky components are easy to handle, making them a good choice for younger modellers.

If you remember the originals, you'll notice that no brakes are provided, there being a problem with the mould for that. This isn't really a problem as most of the prototypes wouldn't have been fitted with brake gear anyway.

The new couplings offer more options than the originals too, and are less fragile. Looks are nice, but on a garden railway, ease of use matters, which is why we couple with bath plug chain and paperclips!

To me, these are wagons whose time has come. Back in the 1990s, outdoor modelling wasn't about hi-fi rolling stock with lots of rivet detail. Now, the trend towards more scale wagons should see these be popular all over again. I'm certainly looking forward to adding to my rake of originals.

Garden Rail Resource

Cambrian Model Rail Ltd.
PO Box 85, Greenhithe, DA10 9DN
www.cambrianmodelrail.co.uk

CC3001 Slate Wagon £22.50
CC3002 Croesor Wagon £16.50
CC3004 LNWR Coal Wagon £22.50
CC3005 Pair of Timber Bolster Wagons £39.60
CC3006 1 Plank Open Wagon £16.50

Note: All wagons are 32mm gauge only.

Please mention **Garden Rail**
when contacting suppliers.



Hosting a garden open day

Last year, Andy Christie opened his garden to the general public, and it proved a great way to expose them to the joys of garden railways.

To go ahead and open your own private garden to the public is a very bold and brave thing to do. The decision can leave you pondering over many questions and thoughts. Who will visit? How many will visit? Is there enough cake? Thankfully, our experience in 2022 was delightful and very successful. However, being prepared is everything.

Our family home is located in South Birmingham and we are proudly part of Bournville Village. On one Sunday in July, a collective of residents jointly open their

gardens to raise funds for charity under the well known umbrella that is 'The National Garden Open Scheme' (NGS).

Soon after moving into our house near the famous chocolate factory, my wife Louise and I became aware that a number of gardens were taking part in this event. After reading a little more into it, we felt this would be a simply nice thing to do and a good way of meeting our local community.

A joint decision was made to go ahead and open. Louise felt that the garden was looking in pretty good shape after four

years of hard work. Our patch was a true blank canvas when we arrived, and now we have turned it into a homely retreat with lots of now-established plants and boarders providing a good show and, of course, a growing garden railway.

From the outset, we did have some reservations about letting strangers into our garden. To some extent, will still do, but we have received no trouble. There are several simple steps you can take to avoid unwanted intruders and improve security. The easiest being to lock doors and remove the

keys to area you want secure, including out building and sheds. Remove all keys, items of value from lower ground floors (perhaps leave the TV). We decided to leave the curtains open as we felt this would indicate we have something to hide.

I personally felt confident with our arrangements and we asked friends and family to help on the day. By having extra people who we knew, visibly deters anyone from going where they shouldn't. The NGS provided us with a ticketing system and card reader. Having to pay an entry fee is another way of discouraging unwanted visitors.

To tick the 'garden satisfactory' box, we were visited in the early stages by an NGS assessor to make sure our garden was suitable. We were slightly disappointed by her comments as she said, 'What makes this garden special is the train'. My wife had worked her socks off to make our bit of England look this good! Our assessor left us with a list of recommendations to complete before opening to the public. One of which included the laying of hazard tape on step edges, around trip hazards and area of unevenness. She also checked to see if we were wheelchair friendly, which we are.

The biggest area of concern from our assessor was the height difference between adjoining properties on the route to our garden, which was unfenced. The height is approximately 18 inches, but our assessor said it will be needed to be fenced to allow us to open. I had planned to install a fence at some point and my plan had to be fast-tracked to design, build and install one in time for our open day.

My wife and I are both big fans of the National Trust and inspiration derived from the many different styles of Ironwork fences found in their gardens. I recall the material for this costing around £200 to create the desired effect. A bit of a price, but it was on my to-do-list anyway and to me, this is what gardens and garden railways are all about, recreating what you've seen in your own way.

Another 'to do' was to improve mobility of a swing bridge, which carries the running line over a footpath. My good friend Cameron Stevenson came to the rescue with a welder and using some 20mm box section, we made up some grab handles and fitted them on. We braved the rain to get this job ticked off. At the same time, we welded some angle brackets to make the alleyway fence truly secure. All that was left to do was to now put the event signage supplied by NGS, make some cakes, put the kettle on, and steam up some engine.

When I can, I like to keep on top of keeping the garden railway in 'tip-top' running order, i.e. making sure vegetation



Some last minute welding to prepare the bridge for use.



I had the chance to play trains before the crowds arrived.

is kept trimmed as my young son enjoys pushing wagons and carriages around the line. However, for the open day, operations may be a little different as I had by this time made a start on extending the garden and the railway.

For a short time, the line was a full circle with the main line passing through the carriage shed. A year before our open day, we had successfully completed purchasing some land and we had made a start at moving boundaries and sheds. Thus, the circle was broken. It was going to be some time before the circle could be reformed so an 'End to End' operation was the only option. As it stood then, the line with no

name had two stations and one halt. Three passing loops and two long sidings. I felt confident there would be enough activity to entertain visitors, I just needed some more engines.

The open day soon arrived. We were joined by friends Richard Bratly with his colourful Darjeeling B Class and Editor Phil Parker and his Regner vertical boiler loco. Together, with my own locos, a Roundhouse Charles and Russell, we had a splendid line-up of live steam for what would also be the first gala in our garden. What could possibly go wrong?

This was soon answered by Richard's cry for help as he found his train was running

away on a downhill gradient. There's one section of incline on my railway, which raises the line up to meet the swing bridge and Richard had found it. I recall he was completely taken aback as he'd not experienced driving on gradients only his own line, which was flat and level.

After a little instruction on how to use his reverser to generate resistance in the steam chest to slow his train, operations returned to normal. The only other delays were caused by the Editor eating cake. But who could blame him? The sun was shining, the weather was glorious, and this is the hobby at its best, playing trains with your mates.

Guests were still arriving right up until close and as we closed the garden gate at 5pm, we had sold £340 of tickets for the Bournville Gardens collective and recorded just over 300 visitors. Amazing. During the entry process, you can choose whether to provide refreshments and facilities. I'm pleased we did provide refreshments, as this added to the atmosphere of a jolly day. One of my neighbours kindly provided some extra chairs and tables. It was great to see people using them and stay for a while to take in the views.

Upon reflection, Louise and I felt very humbled by the large number of visitors who took the time to visit our garden. We received many kind comments and questions. There were only a couple of truly nosey people asking about the value of the trains. I however think that they honestly hadn't seen live steam in the garden before. To their questions on value, I replied, 'take a look on the internet, you might find a bargain'.

Being prepared is indeed everything for this kind of event. There will always be someone who needs the loo and you never know what the dog is going to leave behind, but it's good honest fun, and it's great knowing you're doing something for charity.

Finally, would we do it again? Come and see for yourself on Sunday, July 2nd.

Details can be found on NGS website.

Editor: It was an excellent day last year, and I'm planning to visit again with even more locos this time. The visitors were really interested in the trains, and many seemed to decide they didn't need to tour any more gardens, having found the perfect mix of lovely planting, small chuffers and cake. I'd certainly recommend inviting other modellers along if you put on an event, so they can keep things moving and spend time discussing the hobby while the host runs around doing all the other jobs. ■



Richard Bratly's colourful Darjeeling B Class locomotive.



Cake stops play!



Linda on a passenger train.



Russell on the viaduct.



Richard peers through the planting to find his train.

DIARY DATES

Date: 25 to 28 August, 2023

Event: Aylsham Minor Running Weekend

Venue: Bure Valley Railway, Aylsham Station, Norwich Road, Aylsham, Norfolk, NR11 6BW

Times: 10am to 4:30pm

Web: www.bvrw.co.uk

Date: 25 to 28 August, 2023

Event: The Big Model and Hobby Show

Venue: Formby High School, Freshfield Road, Formby, L37 3HW

Times: 10.00am to 4.30pm

Web: www.modelandhobbyshow.com

Date: 30 September, 2023

Event: Yorkshire Garden Railway Show

Venue: Barrow Hill Roundhouse Railway Centre, Campbell Drive, Barrow Hill, Chesterfield, Derbyshire, S43 2PR

Times: 10am to 4:00pm

Web: www.yorkshire.16mm.org.uk/Yorkshire16mmShowhomepage.html

Date: 28 October, 2023

Event: Exeter Garden Railway Show

Venue: The Matford Centre, Matford Park Road, Marsh Barton Ind Estate, Exeter, EX2 8FD

Times: 10.30am to 4.30pm

Web: www.exetergardenrailwayshow.com

Date: 12-15 October, 2023

Event: Midlands Model Engineering Exhibition

Venue: Warwickshire Event Centre, A425, Southam Road, Leamington Spa, CV31 1FE

Times: 10am to 4:30pm

Web: www.midlandsmodelengineering.co.uk

Date: 2/3 March, 2024

Event: Midlands Garden Rail Show

Venue: Warwickshire Event Centre, A425, Southam Road, Leamington Spa, CV31 1FE

Times: 10am to 4pm

Web: www.meridienneexhibitions.co.uk/events/midlands-garden-rail-show

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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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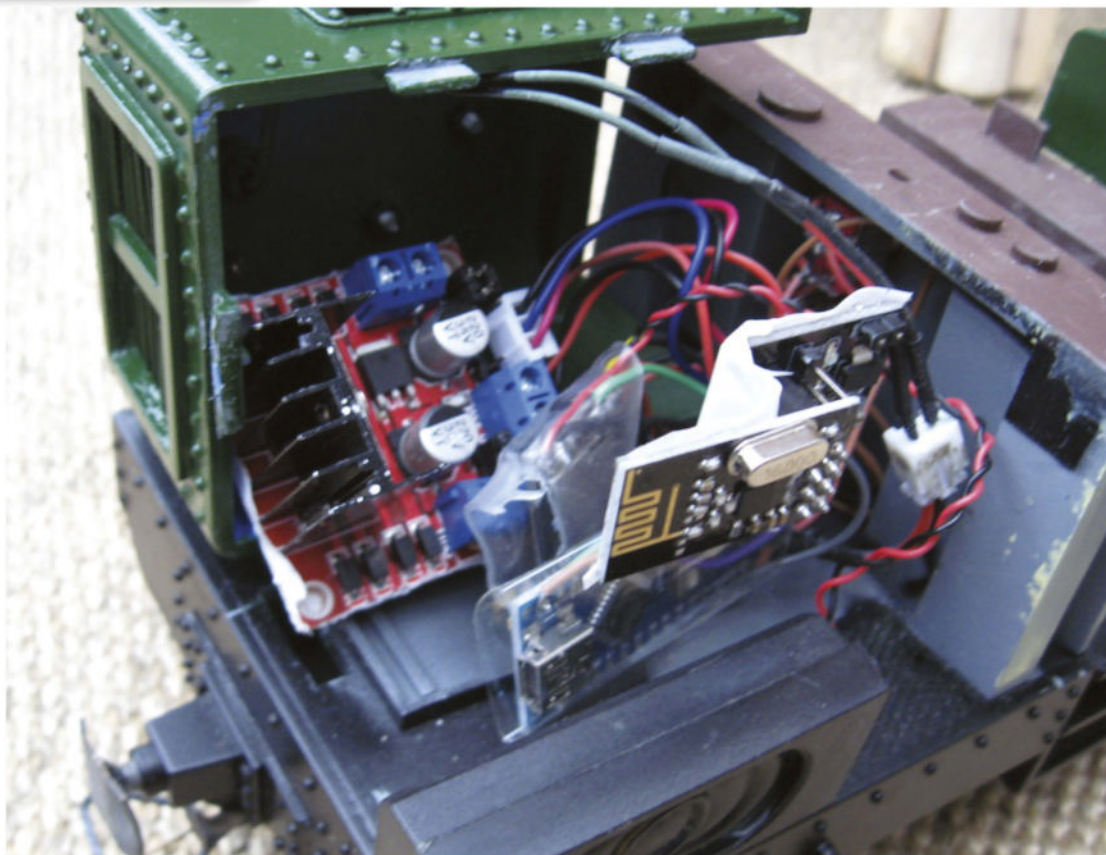
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LGB ToyTrain diesel bash – Part 2: Arduino-based control

Rik Bennett develops a low-cost radio control system.

Last month, I described how I modified an off-the-shelf LGB ToyTrain diesel loco to make it look more appropriate for my 1930s UK-based narrow gauge railway. I mentioned how I had initially used the loco as a test-bed for my experimentations with Arduino-based control systems.

At first, I explored controlling the loco with Bluetooth phone apps. Whilst this was successful technically, I found the necessity to keep looking at the screen of my phone to press the on-screen buttons or swipe sliders to be distracting, if not near impossible, when the sun shone. I much prefer having a handheld transmitter with a speed control knob and physical buttons and switches, which can be operated by touch, much like the Deltang radio control systems I have been using for several years for the majority of my locos. I find the compact nature of the combined Deltang receiver/ESCs to be ideal for fitting into even the smallest loco, such as my IP Engineering Plate Frame

Simplex loco, which also boasts a simple sound system using a couple of greetings cards sound modules.

However, I was intrigued by developments in Bluetooth control and wanted to explore its potential. After baulking at the cost of off-the-shelf systems, I became interested in Arduino-based equivalents, which could be constructed for less than £10. For the uninitiated, Arduino is an electronics control environment that was developed primarily for educational use. A key feature of the Arduino system is the availability of plug-and-play modules, which means that it requires only a very basic knowledge of electronics (ie which lead is connected to what). As it is 'open source' the equipment is very reasonably priced and there is a wealth of freely available information and resources aimed at those wanting to experiment with and explore its potential. And so, the combination of low cost and free resources certainly appealed to my penny-pinching mentality.

I started off knowing nothing about Arduino, but I did have a hobbyist knowledge of basic electronics and computer programming. This certainly eased the learning curve, but I honestly believe that anyone capable of soldering a couple of wires together and having the nous to browse the internet and download an email attachment would be able to follow the path that I have trodden.

My consultations with the internet resulted in sufficient knowledge for me to attempt the initial construction of a Bluetooth radio control system using just three components and a free downloaded phone app. The construction was a doddle – a few Dupont leads connected everything together and the code (called a sketch) for the Arduino board was downloaded from the internet.

However, as indicated above, this system fell short of what I wanted and so Google was consulted once more to discover how I could use Arduino to make a more

traditional transmitter and receiver system using 2.4GHz radio control. This entailed changing one of the modules in the loco and purchasing an additional two modules, plus a few bits and pieces (switches, buttons, potentiometer, knob and case) for the handheld transmitter. I found a couple of suitable Arduino 'sketches' on the internet, downloaded them, tweaked them a bit and then installed them in the Arduino Nano boards in the loco and the transmitter. I was pleased that the radio control complete system cost somewhere in the region of £20, though if I had sourced everything from China, I could probably have halved that cost.

All my locomotives are fitted with sound-cards. The majority have MyLocoSound (MLS) cards and one diesel loco has an MTroniks small diesel card. I did toy with the idea of using an MLS diesel card in this diesel but then speculated that I could employ the programming options provided by the Arduino to provide digitised sounds and thus save myself around £50. Five sound files of a Famulus RS1430 tractor and an air horn were downloaded from the SoundSnap website for the princely sum of \$15.00.

These were then edited using Audacity (another free open-source program) to pro-

vide 12 WAV files. The beauty of Audacity for me is its ability not only to extract and then trim snippets of sound from a larger sound file, but also the ease with which one or more sounds can be superimposed over another. For example, the sound of an air horn (extracted from a YouTube video using Audacity) was superimposed over the tracks of the tractor running at different speeds to give the impression that the horn is being sounded while the engine is running.

- 001 - Silence (1 min)
- 002 - Silence plus horn sound (3 seconds)
- 003 - engine start-up to idle (4 seconds)
- 004 - idle (15 secs)
- 005 - idle plus horn (4 seconds)
- 006 - slow run (15 secs)
- 007 - slow run plus horn (4 secs)
- 008 - medium run (15 secs)
- 009 - medium run plus horn (4 secs)
- 010 - fast run (15 secs)
- 011 - fast run plus horn (4 secs)
- 012 - shut down (5 secs)

These were saved onto a micro SD card, which was then inserted into a DF Mini Player module (£1.04 from eBay). By the way, WAV files were used rather than MP3 files to overcome the silent pause in sound when the Player changes from one track to another or when a track finishes playing and loops back to the start. As I understand

it, because MP3 files are compressed to save memory, the Player card software has to decode them and hence there is a slight pause when starting a new track.

The original 'sketch' for the Arduino Nano was modified to allow the Mini Player to play the engine start-up and stop tracks when the relevant button was pressed on the transmitter, to sound the horn files when another button was pressed and to change tracks in response to the throttle settings. Rather than going through the technicalities of how the sketch works, I have included textual comments within the code to explain the purpose of each instruction.

The sound system is not perfect. For example, there is no gradual increase in engine noise in relation to the loco's speed – the sound files change when predetermined speed boundaries are crossed. However, I feel the changes are not particularly noticeable and for the modest total outlay of around £15 for the sound files, the Mini Player and a speaker, I am more than happy with the results. There is no reason why the number of sound files cannot be increased on the SD card, there is plenty of spare capacity and so someone with more time and patience could easily have the engine note increasing more steadily by making the

The receiver and control system

Table 1 – Connections to the Arduino Nano for the receiver

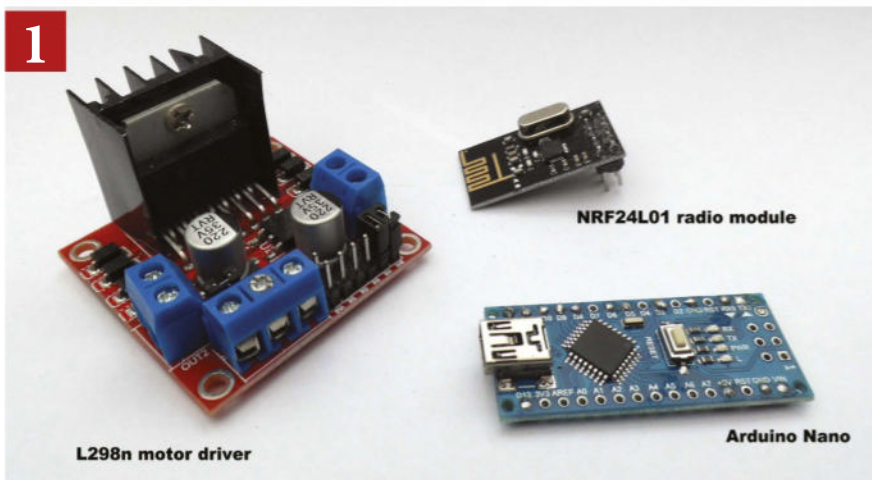
Nano pin	Connected to	Comments
D2	Forward facing LED (+ve)	via a 100 ohm resistor
D3	ENA pin on L298N	D3 provides PWM output
D4	IN1 pin on L298N	When high loco moves forward (IN2 Low)
D5	IN2 pin on L298N	When high, loco moves in reverse (IN1 Low)
D6	Rear facing LED (+ve)	Via a 100R resistor
D7	CE pin on NRF24	
D8	Rx input pin on DF mini player	Via 1k resistor to help protect the mini player
D9	Tx output pin on DF mini player	
D10	CSN pin on NRF24	
D11	MOSI pin on NRF24	
D12	MISO pin on NRF24	
D13	SCK pin on NRF24	This pin must be used exclusively for SCK
A0 – A7	Not used	Could be used as output triggers for soundcards etc

speed steps between each sound file smaller. It would merely entail extending the code, and I've added comments within this to help tinkerers.

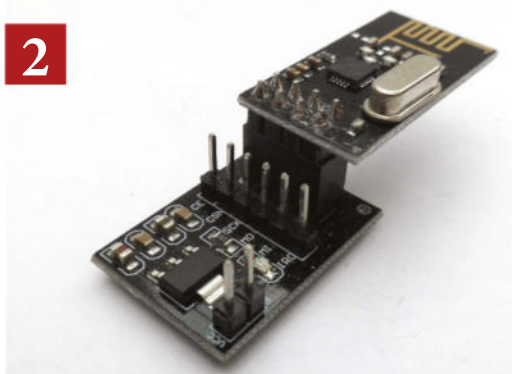
Overall, I am pleased with the results of my labours. The transmission range of the NRF24 module is claimed to be 100 metres. I certainly have no problem reaching the extremities of my garden at around 20 metres. As with Deltang, the signal can be disrupted by foliage, buildings and the human body, though I experience no loss of signal when the loco passes behind my workshop. The system does have a few idiosyncrasies, but it is cheap (not including labour). Occasionally, the horn will sound without my intervention, but this is no great hardship. Also, the level of control achieved with the NRF24/Arduino system is not quite as precise as that achieved with my Deltang equipped locos, particularly at slow speed. No doubt this could be improved by using a different motor driver board and/or tweaking the PWM settings in the Nano. The Arduino-based system has the benefit of extensibility in that it is relatively easy to tweak and/or add more automation to the receiver coding. For example, a few lines of code could add auto station-stop and start or auto-shuttle triggered by a reed switch being energised by a magnet, a feature that is available as standard on most Deltang railway-related receiver/controllers. Alternatively, additional sound features could be provided via the Mini Player, such as air brakes, gear change noises, a guard's whistle, station announcements, refuelling, etc.

From my experience, it appears that expending a little effort into getting to grips with Arduino programming is certainly time well spent. But don't take my word for it, there is a video of the loco in action on YouTube so you can judge for yourself – <https://youtu.be/tdBOU-5FfBE>

So, how did I do it? Hopefully, my explanations will be reasonably easy to follow. ■

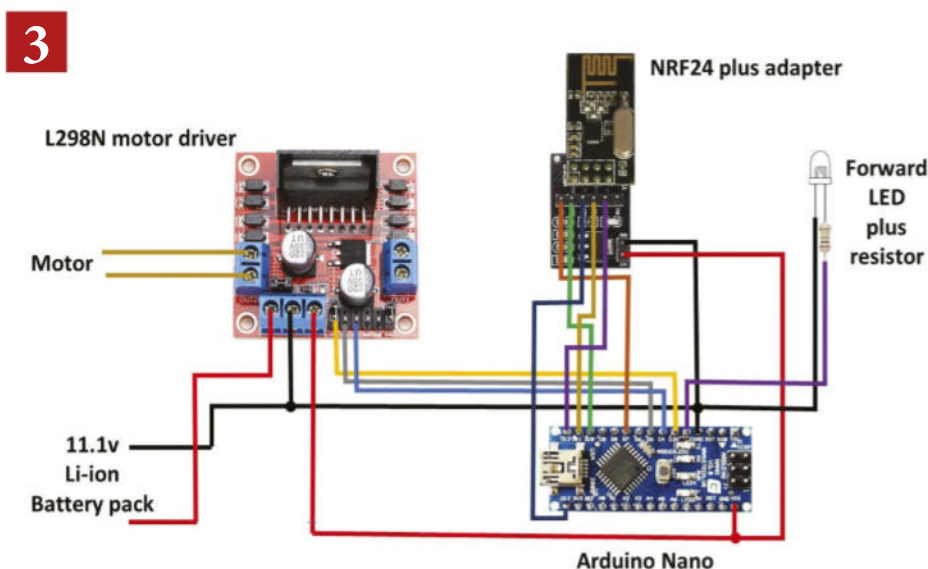


The three components, plus adaptor needed for the loco control system; an Arduino Nano, an NRF24L01 radio module and a L298n motor driver.

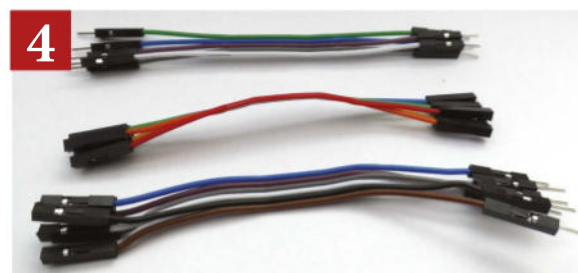


The adaptor for the NRF24 is not essential, but helpful because it simplifies the wiring by eliminating the need for a separate voltage regulator and a 10uF capacitor.

All four items needed for the loco can be bought on eBay for around £10 in total (or less if you source them from China).



The components wired together.



In the early stages, you might need some Dupont jumper cables - male-male, some female-male and some female-female. These are useful when you are experimenting or testing, but I would strongly urge you to solder everything together prior to installation for reliability.



I used three 14500 li-ion cells with tags, soldered together in series through a 3S li-ion battery protection board. Once made into a pack, it sits neatly under the smaller bonnet of the loco. The loco will happily run for around five hours between charges. Note the balance charge socket. I usually balance charge my locos once a year. However, I find the cells are seldom out of balance by more than a few tenths of a volt each time.

Installing Arduino IDE on your computer

6 Download the Arduino IDE



The Arduino Nano needs to be programmed to interpret the signals from the radio module and turn them into instructions to operate the motor control module. A computer program needs to be installed on your computer to be able to check and download the instructions to the Arduino Nano. Arduino IDE is a freebie program from the Arduino website and is available for Windows, Mac and Linux operating systems.



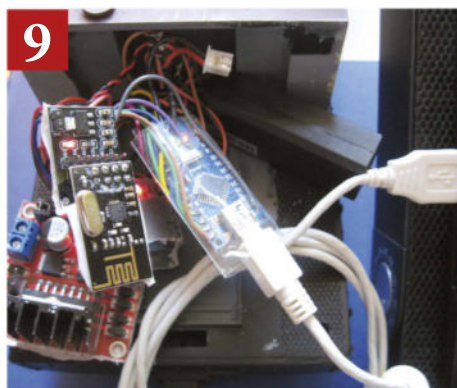
Once it has been downloaded and installed on your computer, the Arduino IDE is ready for action. You can type instructions directly onto the screen, copy and paste instructions from a website or download my set of instructions (called a 'sketch') for the receiver from the DropBox link to the right. (Note: You do not need to sign up to DropBox to download the sketches and viruses cannot be transferred to your computer via Arduino sketches).

Download the code

The code that I used can be typed directly into the Arduino IDE program or downloaded from www.dropbox.com/sh/jlqvbtb89xs4keve/AACx05eDeAnR7q__DERQwq-qa?dl=0

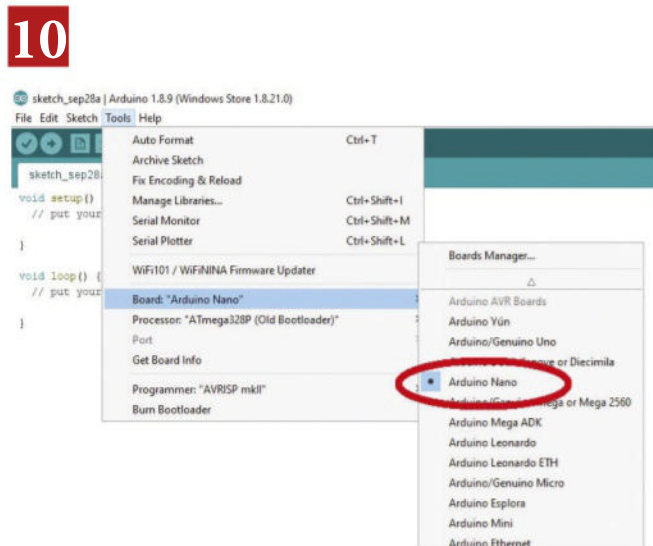


Uploading the receiver code to the Arduino Nano



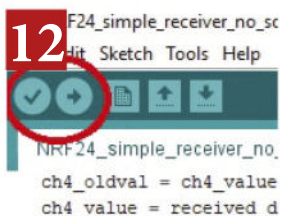
You will need a lead to connect the Nano to your computer – any USB to mini USB connector cable can be used. You might already have one available from another device, or they can be readily and cheaply purchased from eBay.

The sketch for the receiver downloaded and opened in Arduino IDE.

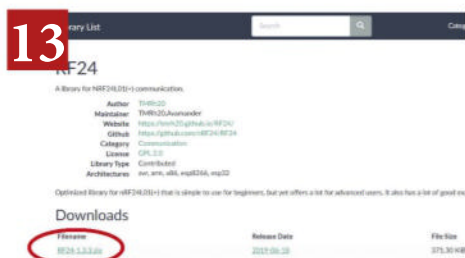


Before uploading the sketch, the Arduino IDE application needs to be configured to communicate with the Nano.

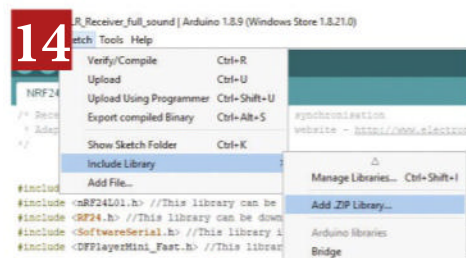
If you bought your Nano from eBay, you will need to tell IDE to use the old bootloader.



Before uploading to your Nano, check the syntax of the code is OK by clicking on the tick button. If no errors are detected, click the Upload (arrow) button. If there are errors, try downloading the code again and re-opening it in IDE or check the erroneous bit of code highlighted by the error checker.



A couple of 'libraries' of commands will need to be added to the basic Arduino program to enable the Nano to communicate with the NRF24 board. Adding libraries is dead easy. Go to the relevant website (see link below) and download the library as a .ZIP file.



Once these have been saved to your computer hard drive, they are installed in IDE by going to the 'Sketch' menu, clicking on 'Include library' and then on 'Add .ZIP library'. Navigate to where you saved the libraries and they will then be unzipped and installed in IDE.

The Transmitter and its control system

Nano pin	Connected to	Comments
D2	SPDT switch centre pin (other two pins of switch connected to ground and 5v output from Nano)	Enables the D2 to be switched high(5v) or Low (0v)
D3	Push button 1	Other pin of button connected to 0v
D4	Push button 2	Other pin of button connected to 0v
D5	Push button 3	Other pin of button connected to 0v
D6	Not used	Could be used for additional switches or buttons
D7	Not used	Could be used for additional switches or buttons
D8	Not used	Could be used for additional switches or buttons
D9	CE pin on NRF23	
D10	CSN pin on NRF24	
D11	MOSI pin on NRF24	
D12	MISO pin on NRF24	
D13	SCK pin on NRF24	This pin must be used exclusively for SCK
A0	To centre pin of 10k pot	
A1	To centre pin of two-way switch	
A2 – A7	Not used	Could be connected to other potentiometers for live steam loco control
3v3	To +ve leg of LED in illuminated on/off switch via 30R resistor	
5v	To one of the outside pins on the potentiometer	The other outside pin of the pot connected to 0v (ie ground)

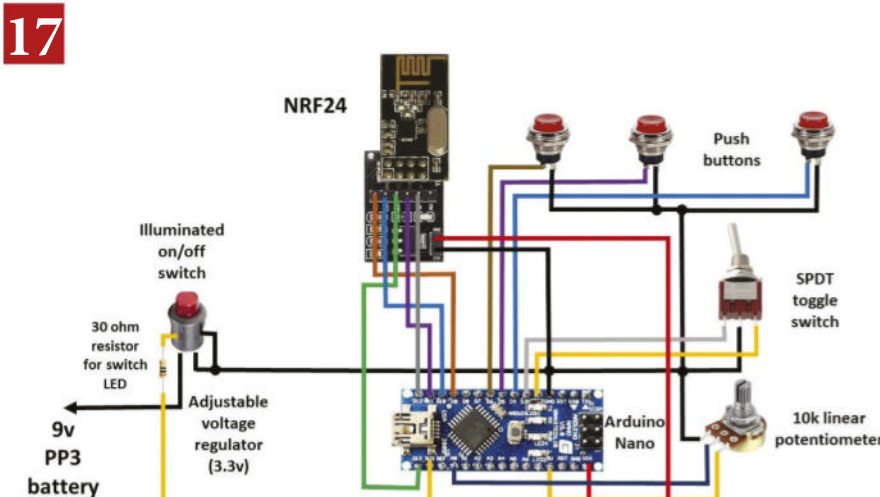
Connections to the Arduino Nano for the transmitter.



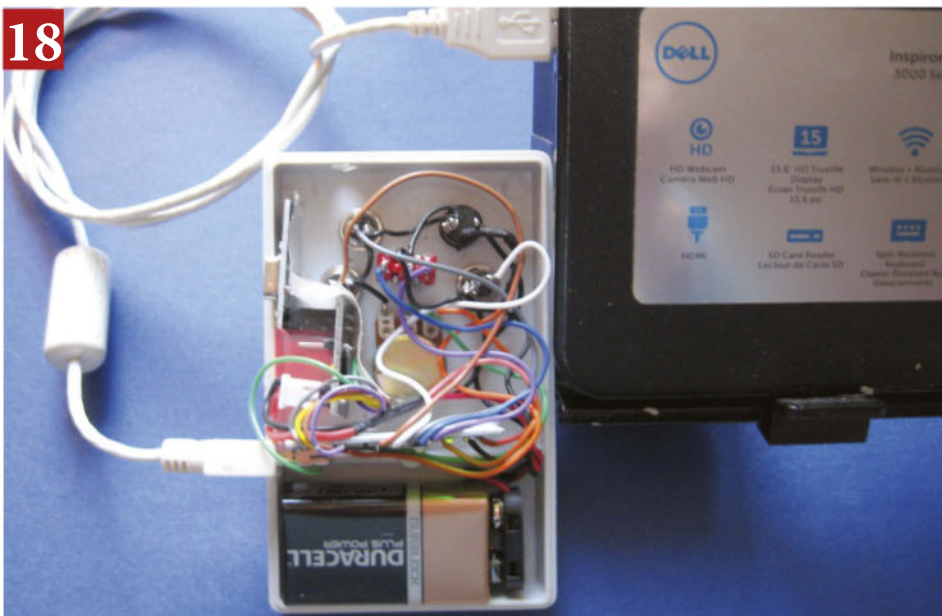
The main components needed for the transmitter. Another Arduino Nano, an NRF24 transceiver module and an adaptor for the NRF24 as in the receiver.



The case and overlay with the controls mounted. I originally used the more powerful NRF24 with an extended aerial but soon discovered it wasn't needed and that it exhausted the PP3 battery after less than an hour's use. The battery should give at least 12 hours of continuous use with the smaller NRF24 module.



To keep the layout similar to my Deltang transmitters, I opted for a speed control knob on a 10k linear potentiometer, a two-way single pole switch, three push buttons, an illuminated on-off switch and a PP3 battery snap connector. You can decide how many switches and/or push buttons you want, or use a series of potentiometers if you want to operate a live steam loco instead. The three push buttons and self-centring two-way switch on my transmitter could, potentially, trigger five channels to enable me to operate lighting or trigger sounds on my locomotives.



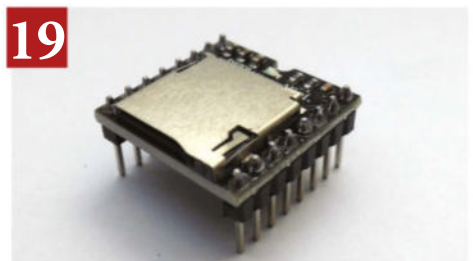
The interior of the transmitter case showing the components neatly(?) arranged. The NRF24 and its adapter are mounted vertically on the left. The Nano is horizontal just above the battery. The modules are either covered in shrink-wrap or their underside insulated with Gaffa tape to avoid accidental short circuits. The code for the transmitter is uploaded to the Nano in the same way as the code for the receiver.

Garden Rail Resource

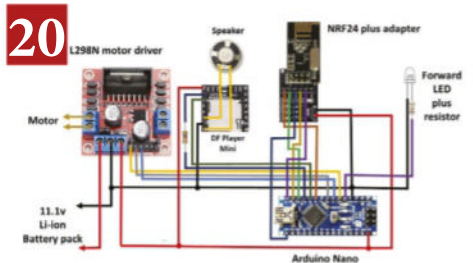
Arduino IDE (for free sketch editing software)
www.arduino.cc/en/Main/Software
 Arduino website for NRF24 library ZIP file
www.arduino-libraries.info/libraries/rf24
 Audacity (for free sound editing software)
www.audacityteam.org
 Deltang
www.deltang.co.uk/buy.htm
 Ecolux (for good quality li-ion batteries with solder tags)
www.ecoluxshopdirect.co.uk
 Eltop Electronics (for the handheld case with battery compartment)
www.eltopelectronics.co.uk
 MyLocoSound
www.mylocosound.com/mylocosound_020.htm
 MTroniks (for digitised diesel sound cards)
www.mtroniks.net/prod/Sound-Systems-For-Scale-Models/digisound5mSDT.htm
 Rapid Electronics (for transmitter components)
www.rapidonline.com
 Soundsnap (for tractor sound file downloads)
www.soundsnap.com/tags/tractor
 All other components (eg Arduino Nano, NRF24, DF Mini Player, 3S li-ion battery protection board, etc.) were purchased through eBay.

Please mention **Garden Rail** when contacting suppliers.

Adding sounds



The DF Mini Player module. A micro SD card is also needed on which to store the sound files (saved as WAVs). The order in which they are loaded onto the card determines the order in which they are played.



How the components are wired up for the sound-enabled system in the loco.



Can the Can?

Dave Skertchly looks into the detail of one of the most neglected pieces of technology on a garden railway.

The ubiquitous 3 volt can motor is used in so many of our battery electric locomotives, especially the small ones so much beloved of the battery electric faction. Of course, there is no such thing as a battery electric faction; pretty well every oily garden rail enthusiast will have some kind of battery electric locomotive powered by a can motor in their shed. These incredible motors can cost as little as 60 pence each, when bought in a job lot at a show, to as much as a staggering £3.97 when bought from a reputable trader such as MFA (MFA RE280).

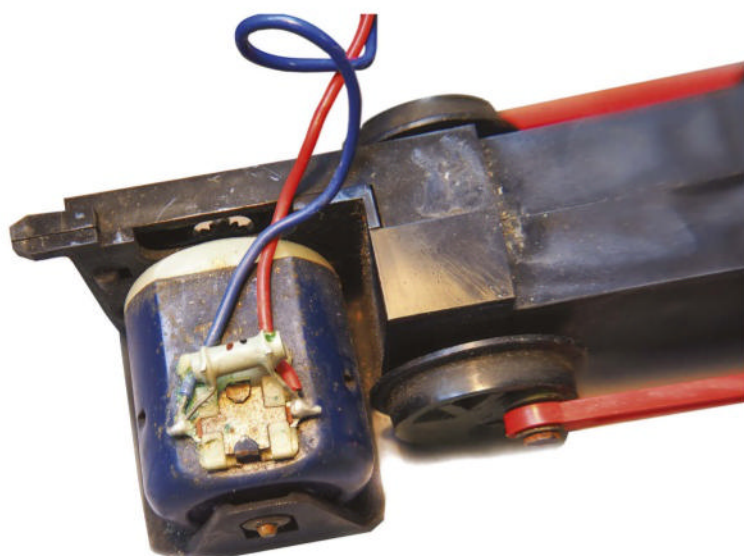
My love/hate relationship with can

motors started when I was about 11 years old. KielKraft Quick Built model boat kits required a Mabuchi motor (not included), which cost four shillings and 11 pennies, that's roughly five bob or 25 pence, if you must. My pocket money was a mere shilling (5p) per week and for that there could be no transgressions; it was going to be an agonising five-week wait. Fortunately, my Grandfathers, Norman and Ted, slipped me half a crown (37.5p) each, and work could be accelerated. The motors were the same as those later fitted to the Tri-ang Big-Big trains, and the brushes would rapidly burn out on the souped up 4.5 volt

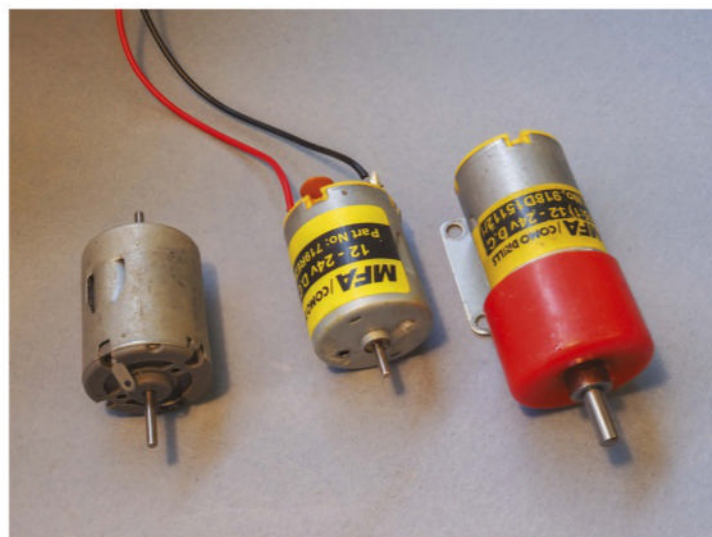
batteries, which I would use to try and get some speed out of my motor torpedo boat.

It was my Grandmother who knew about engineering, who showed me how to heat up the batteries in the gas oven and how to oil the propshaft with 3-in-one oil, so the boat would zoom around the bath. Grandad Ted, however, complained that he smelt more of oil after having a bath than he did before; Gran and I kept quiet.

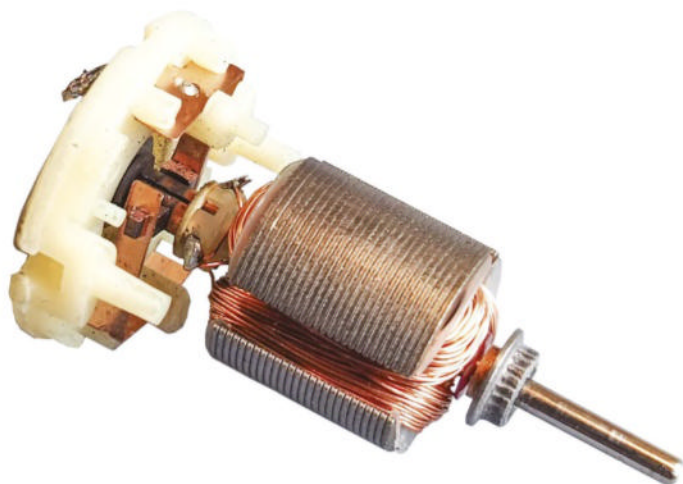
When I returned to battery electric power, the can motors had changed. They were relatively cheaper, I bought a bag full at the National Garden Railway Show, which worked out at 60p each, and I am



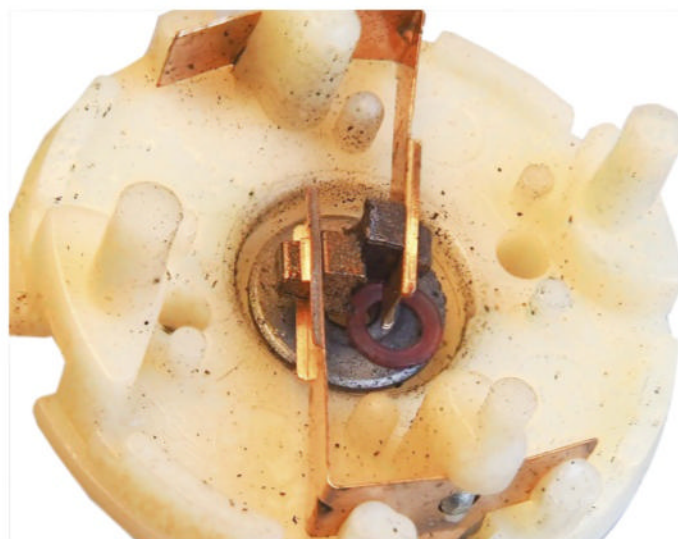
The early Mabuchi motors of my childhood were the same as those later fitted to the Tri-ang Big-Big Trains.



Look carefully and you will see that there seem to be a number of can motors that run in the 1.5 to 4 volt range. The smaller ones tend to run faster but with less torque (pulling power). There are similar-sized motors running in the 6 to 12 volt and 12 to 24 volt range, which will require significantly larger batteries.



To dismantle the motor, prize the tags apart and carefully slip the rotor, commutator and back plate out of the body by pushing on the drive shaft so as not to damage the brushes. The brushes and commutator, it transpired, are of high quality, the brushes even having tiny carbon contacts.



By carefully prizing the brushes apart, it is possible to get a look at the commutator and brushes. Note the little bronze thrust washer; make sure it is in place on reassembly.

still using them. The brushes are more accessible, but the round can is more difficult to glue down, and they come without a support bracket. These can motors have been an unqualified success, powering 10 of my locomotives, and just one motor has worn out in the last decade, with a wonky front bearing.

There is no clue where these motors come from except for 'Taiwan' stamped on the front. Look carefully and you will see that there seem to be a number of can motors that run in the 1.5 to 4 volt range. The smaller ones tend to run faster but with less torque (pulling power). There are also similar-sized motors running in the 6 volt to 12 volt and 12 volt to 24 volt range, and these will require significantly larger and more expensive batteries.

I decided to sacrifice one of my motors for the benefit of *Garden Rail* readers and science. I prized the tags apart and then carefully slipped the rotor, commutator and back plate out of the body by pushing on the drive shaft so as not to damage the brushes. The brushes and commutator, it transpired, were of high-quality, the brushes even having tiny carbon contacts. The powerful magnets are crimped into the barrel, the crimped slots creating suitable cooling gills, although these motors don't seem to get even slightly hot.

While the motor is in pieces, I tapped out the front holes M2.5. It is possible to tap them without dismantling the motor by lining up the tap between the rotor coils but better safe than sorry. On reassembly, make sure the thrust washers and

front bearing are in place. To my relief, the motor was reassembled, and will indeed be used on my next project, waste not want not, as they say.

At around 2.5 volts to 3.7 volts, there are a whole range of batteries that can power our locomotives. The 3.7 Volt Lipo batteries are so called single cells, which do not need a balance charger, so one of those USB chargers is perfectly adequate. Two or three NiMh cells will yield 2.4 or 3.6 volts respectively. They have the advantage that they are heavier but are significantly more bulky.

I thought it would be helpful to include a gear selection chart. It is self-explanatory. The motors run at 8,000 rpm. The big X in the middle shows that, by using 3 volt batteries (two dry cells), a model

MOTORS

ALL SCALES



Powerful magnets are crimped into the barrel, the crimp slots creating suitable cooling gills, although these motors don't seem to get even slightly hot.

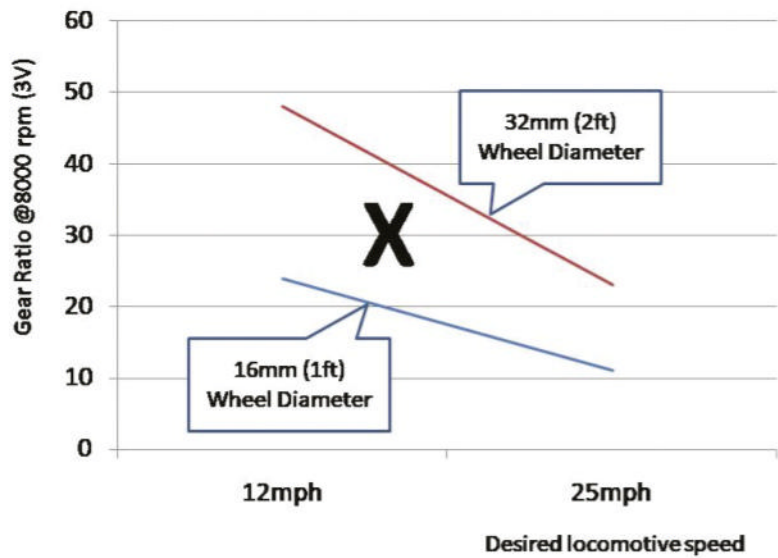
locomotive having 18" (full-sized) wheels will travel at 14 mph and for a 3.7 volt lipo it will be approximately 17mph. There are an infinite number of options, but if all else fails, a small inexpensive speed controller can save the day.

The advent of 3D-printed chassis has transformed the way these motors can now be mounted into kit locomotives. Solid printed mounts, which do not resonate and do not need glue, are now common. As already mentioned, MFA supplies a slightly up-market version of the can motor, which can even be bought fitted with a gearbox. My freelance diesel runs superbly on two large NiMh batteries, which yield just 2.4 volts. A Saltford Models semi kit from the 1980s has been modified to use my favourite can motor. The motor is hidden behind the driver, who has had major surgery to his 'bits' to clear the battery, and hence his rather pained expression.

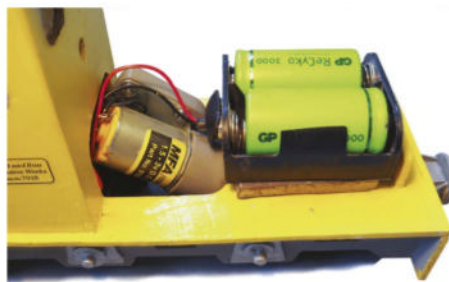
Recently, I have made metal framed gearboxes with the can motor screwed to the frame, so that I can adjust the meshing of the gears. The motor is hidden in the back of the oversized firebox. My early efforts included gluing the motor between the frames of an inside-framed locomotive with two-pack epoxy, it has worked for the last 20 years, so don't knock it. For outside frame models, gluing the motor to a sub-frame, which is bolted between the frames has worked well.

As I sit on my rustic park bench outside the Sheep Shearers Arms, I sip at my pint of fine Auld Phagbutt and reflect that Can motor powered locomotives look great on any line. I have no idea how much they can pull because the wheels invariably slip before they are pulling the maximum load, so how to measure their power. Thinks...■

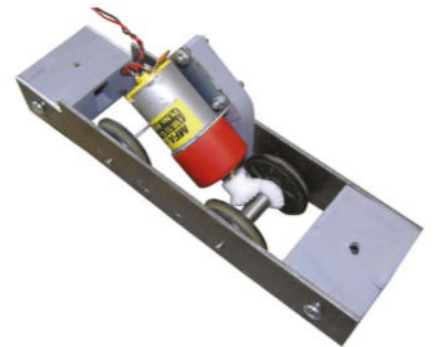
Gear Selection Data for a CAN Motor



The gear selection chart is self explanatory. The big X in the middle shows that using 3 volt batteries (two dry cells), a locomotive having 18" (full sized) wheels, will travel at 14mph.



The advent of 3D-printed chassis has transformed the way these motors can be mounted into kit locomotives. Solid printed mounts that do not resonate and do not need glue are now common such as on this HGLW yard shunter. It has superb performance on just 2.4 volts.



MFA supplies a slightly up-market version of the can motor, which can even be bought fitted with a gearbox. This freelance diesel runs superbly on two large NiMh batteries, which yield just 2.4 volts.



This Saltford Models semi kit from the 1980s has been modified to use a favourite can motor. The motor is hidden behind the driver.



Ever Ready Railway Group

Dave has created a Facebook page for battery electric locomotive fans, it is called 'Ever Ready Railway Group', perhaps you would like to contribute your ideas?
www.facebook.com/groups/236259860415472



The HGLW semi-scale yard diesel has plenty of power and four-wheel drive on just 2.4 volts.



Two-wheel drive on 3.7 volts with a speed controller. Penelope the Peckett is seen on Quarry branch on a chilly winter's day.



Return to the Anglesey Model Village

Ben Bucki has returned to Anglesey and brings us details of the changes to this popular railway attraction.

I first visited the Anglesey Model Village in the summer of 2019, and penned an article about it for *Garden Rail* shortly afterwards. I'd hoped the piece would be both an appreciation of the village and an encouragement for people to visit. Naturally, this ended up being printed immediately before Covid, and its resultant travel restrictions, demonstrating my usual knack for timing, if nothing else.

Returning to Anglesey in 2022, I was happy to discover that the model village had weathered both the metaphorical storm

of multiple lockdowns, and the very literal (and damaging) storms of early 2022, and the team there are very much looking optimistically to the future.

As a quick recap; the Anglesey Model Village was established in 1992 as a way of showcasing buildings from around the island. Whilst it operated successfully for many years, the original owners eventually took retirement and the village took on that odd disaster-movie-type appearance that many such attractions enter whilst being mothballed, with somewhat overscale

nature reclaiming the village. Happily, enthusiastic new owners came forward to take over and rejuvenate the place.

Railway redevelopment

The previous owners had engineered a bespoke railway to scale with the houses; proper home-made miniature engineering with a pair of tank locomotives, rolling stock, chassis, motors, and automatic stop-start mechanisms, all built from scratch using reclaimed components.

It was a bit of a double-edged sword,

of course, impressive in its own way, and beautifully in keeping with the surroundings, but I can remember the new owners (when I interviewed them in 2019) being concerned about how long it would last, and that a tough decision was looming. The trains were already becoming a bit temperamental, and, indeed, on my visit only one locomotive was running (and that was in a cannibalised condition).

“The vintage stock has been in place since the model village first opened”, Nick, one of the co-owners of the village, told me earlier this year. “They were hand-built from random second-hand parts, some of which was taken from broken machinery and tools found at various agricultural and military auctions and sales. With some of these parts dating back to the 1960s, and long since obsolete, it made the maintenance of the trains in the 21st century using modern day components very challenging indeed. We had some short term successes which got us through 2019 and 2020, but, the number of days where both trains were running could literally be counted on one hand.”

“In late 2019, we came across Rod, a local gentleman who had expertise with working with handmade model trains. He was able to completely strip down the one train and rebuild it for us, ironing out some of the ongoing issues we had, such as misaligned bogies. His work did give us more time with the vintage stock, but sadly proved not to be the solution we needed to stay on this basis. The refurbished train looked great and ran well in the short-term, but suffered with its own problems, e.g., gradually shaking itself apart over the extended period of the day whilst it was being run.”

This perhaps illustrates the contrast with the sorts of garden railways we run at our homes, which might be used a couple of times a week for a few hours at a time. The trains at these commercial venues tend to run all day, and eventually that takes its toll – particularly with ageing equipment like the increasingly-vintage tank locomotives in use at Anglesey.

I asked if the possibility of bespoke replacements had been considered, and Nick confirmed it would have been the ideal solution, but that requires both time and money, both of which they didn't have whilst Covid was in full swing. They were, and still are to some degree, living hand to mouth. It is the solution that they wish to revisit in the future when the time is right.

The original tracks on the layout were, naturally, just as bespoke as the stock, and engineered to the same standard from wooden sleepers and metal strip. Whilst good for its day, twenty-five years of rigorous use had taken its toll, on an island that catches salt-laden sea breezes as well as the



The old order; the goods train, hauled by 'Bertie', pauses at Llanfair P.G. station. The characterful train, scratch-built and battery-operated (of early 1990's vintage construction) was only just functional on this visit in 2019, and it was clear that the matter of replacing the railway with something more reliable was going to need to be considered in the near future.



The LGB Inter-City Express races past the terrace of cottages near the pond. As with the overbridge in the village scene on the far side of the gardens, the long tunnel is another clue to the larger loading gauge and scale of the former line that existed here.

traditional Welsh 'liquid sunshine.' Nick confirmed that both tracks had gradually lost their consistency on width, gauge, and general mechanical condition, meaning that derailments and track failures were becoming a regular feature.

It was inevitable then that to keep this essential part of the model village working, the decision would, however reluctantly, need to be taken to replace the old trains. And if commissioning bespoke stock and track wasn't a financial option, the only real choice would be to go down the commercial route.

“The decision to move to G scale in late 2020 was very simple”, says Nick. “Low cost, easy maintenance, and readily available. It is vital to the overall look and feel to the model village to have trains running

- they help bring the place to life. We were able to get a basic set up going on the day the trains arrived.”

While the original tracks might have needed lifting, the foundations had been engineered to the same heavyweight quality as everything else in the village, so it was tidied up and the newly delivered G-gauge tracks were laid on the old formation. “A few tweaks in the setup of the electrics and away they went - we've not looked back since. We're really pleased that we took this decision, albeit not necessarily being the final solution we've been looking for. The difference in scale is clear to see, but not so much of a problem as we initially thought it could be; the positive visitor response is testament to that. It is helped that the trains mainly run through the model village



The large and imposing castle model is one of the first buildings visitors see on arriving at the village, and was arguably the centrepiece of the older iteration of the attraction. The model is currently under restoration, but home (of course) to this large Welsh Dragon, one of several for younger visitors to spot around the model village.

gardens, so the time spent travelling around the buildings themselves is fairly limited and as a result the scale difference perhaps becomes less significant. Other model villages have operated on a different scale for their trains for a number of decades, so it is not an issue particular to ourselves. We've got good rolling stock that certainly has a presence when in motion, so the balance of all the different factors involved means that overall, the model village has taken a step forward."

An issue with using commercially-available stock, and one that is faced by many of the other attractions that have gone down the same route, is that generally the trains you can buy in the shops are of European or American-outline, and even those are getting harder to acquire of late. "Affordable rolling stock has become more difficult to find with the recent increased popularity of model trains", admits Nick. More positively though, he added "Over the last 18 months, we've gradually obtained quality second-hand units, meaning that we now have the ability to easily switch out trains that require maintenance or repair. We've been able to train staff on basic train and track maintenance too, meaning that we can usually keep the trains running throughout the entire day, the primary maintenance matter being regular renewal of the pickup shoes every few weeks. I have to admit that the main challenge is to keep the visitors from climbing over the flower-



Interestingly, bits of the older, bespoke-built (and larger scale) model railway from the village survive, such as this carriage, which has been creatively re-purposed as an eatery, carefully sited in a part of the village away from the new railway (and thus calling less attention to the change of scale).



During our visit, the passenger diagram was in the hands of an LGB Inter-City Express set, which is seen on the double-tracked stretch where the passenger and freight circuits come together to cross the pond.

beds to touch the trains!"

I was curious to know if the railway would remain track-powered, or if onboard batteries would be used instead, as had been the case with the older trains. Nick replied that the railway was going with mains power, given the ready availability of high-quality electric locomotives that wouldn't require modification to battery operation. "The track power is fed from the main model village control switch, so it is a simple flick of a switch to turn the power on. Each track has a power control unit located inside a model building next to the track, with a discreetly placed on/off switch on the roof of the model.

"When the G scale setup was first introduced, the trains ran continuously on a set route; more recently we've introduced a single halt for each track. The goods train

stops at a quarry, whilst the passenger train stops briefly at the LlanfairPG station. When the train passes over a magnet on the track, a timer is triggered which kills the power to the track for a set amount of time (configured to one minute)." This matches the operational pattern of the old line, and does indeed add a bit of interest for visitors; indeed, while we were there, several youngsters were spotted excitedly waiting for the trains to set off.

The future

When Covid hit, the initial lockdown of 2020 resulted in closure of the model village to all staff, for over four months. "It meant that all model work and maintenance came to a complete halt", Nick said. "Thankfully, we were able to take advantage of the furlough scheme, which enabled us

to bring existing staff back to the model village once it was possible to do so. We did a small amount of maintenance work to get going again for August 2020. The rest of the Summer was spent catching up on maintenance in the model village and gardens - in the end, we did spend 2020 looking a bit rough around the edges!"

Sadly, they were required by the Welsh Government to close again in late October 2020, however, for this lengthy period of lockdown, as part-time furlough was permitted, the staff were allowed to do some limited work in the background to keep things going until the site re-opened at the end of May 2021. "It's been a big relief to all that we have been able to come through this and subsequently remain open for the 12 months or so since," says Nick. "We've now had one full year of pressing on with the development work and I'm pleased to say it really does show!"

And what of the railway? Whilst it is sad to see the older line removed, the historical significance to the Anglesey Model Village has been recognised, and the trains will be preserved (they were briefly displayed within the village for a while after the track was lifted, but they've been moved inside now for safekeeping). "Going forward, we wish to introduce further layers of detail as well as action to the track scenes, including the use of sidings and goods yards. To explain further, elsewhere in the model village 2022 saw animatronics for the first time and it would be great to be able to utilise what we've learned around this in some way for the trains too. For now, though, a few LlanfairPG station platform announcements are likely to be the next development along with some signals and an operational level crossing."

And the move to G scale has opened some interesting new possibilities. Nick continued "...a side advantage of the use of a standard G-scale by the model village, is the potential for track days. We've already had regulars run their own compatible trains on our tracks; met with some delight too! Another aspect is to continue to encourage the interest of younger train enthusiasts with events such as Thomas the Tank Engine days."

This interactive aspect particularly interests me, and it's nice to think the ongoing development of the railway at the model village will see the involvement and assistance of the wider garden railway community on Anglesey and beyond. The staff and owners of the village obviously recognise the importance of the model railway when it comes to adding animation and inter-



The goods circuit was being operated by an LGB V52 diesel with a rake of tankers; a brightly coloured ensemble, which was proving popular with the younger visitors.



The canal scene at the village, which shows the good use made of commercially-available toy figures. The 10th Doctor incidentally makes numerous appearances throughout the village, much to the amusement of my 'Doctor Who'-mad youngest.

est, and though Covid undoubtedly put a serious delay into the redevelopment plans for the attraction, it's nice to see things getting back into gear. I for one would love to return and witness the development of the railway, its rolling stock, and perhaps even participate in one of these visitors' days. With the backing of the enthusiastic owners, and the friendly, welcoming staff, the future of the Anglesey Model Village is looking bright indeed.

For their assistance in the preparation of this article, I'd like to once again thank the team at the Anglesey Model Village, particularly Nick Bowler. ■

Garden Rail Resource

Anglesey Model Village
Newborough, Llanfairpwllgwyngyll,
Anglesey, LL61 6RS
www.angleseymodelvillage.co.uk

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The tanker train waits at the quarry; as with the older, larger-scale railway, there are two independent circuits, with the longer run themed around freight. In older times, this was a minerals train, but the opportunity has been taken to widen the variety of stock on this service, though the trains still pause for a while here, to replicate being loaded.

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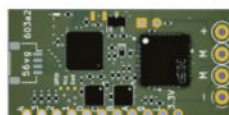
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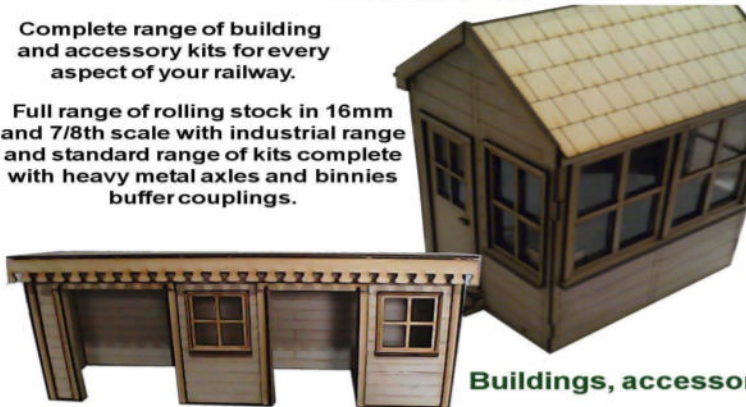
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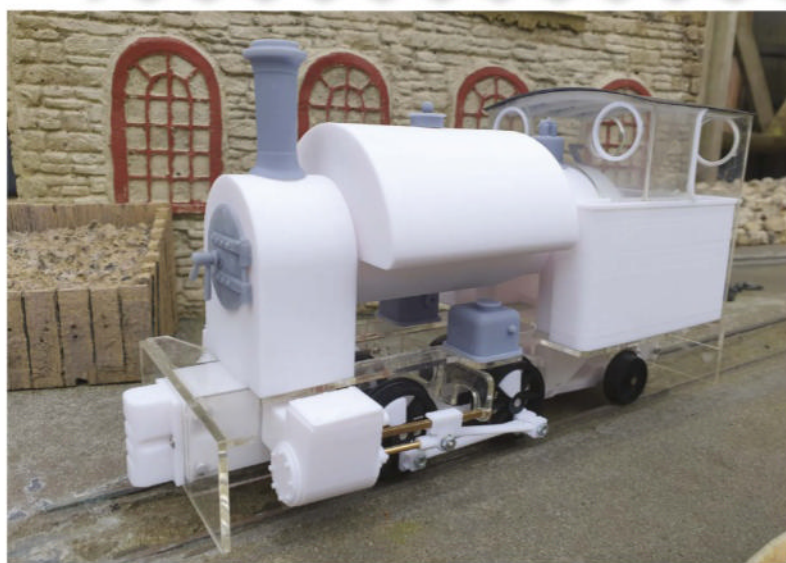
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BOOT LANE WORKS

16mm scale Corris locomotive kit

'St Crispin' is inspired by Corris No 4 - Kerr Stuart 'Tattoo' saddle tank. The kit includes parts to build Corris No.4, or the Tallyllyn Hunslet rebuild in 1952 with cab openings on both sides. If you prefer an Awdry prototype, a cast resin character face is also included. The kit is built from 3D-printed filament and resin parts, plus laser-cut acrylic frames and cab. It utilises Boot Lane's new adaption to the Binnie Engineering 29mm wheel, creating an effective driving wheelset.

Complete with a 3-6 volt motor, nylon worm gears, Binnie Engineering 29mm wheels on 1/8" stainless steel axles, all necessary metal stock, nuts, screws and washers required to build the model in the photos are in the box.

Also included is a micro slide switch (with a corresponding laser-cut hole in the footplate) and a selection of resin-printed detail parts.

There is adequate room in the boiler and tanks for four "AA" batteries or a 3.7V Lipo battery. Batteries, Loco Remote, or any electrics (except micro switch) are not included in the kit.

The model will comfortably negotiate 24" curves or tighter!

Although not for beginners, the kit is reasonably easy to construct and requires basic tools, glue, paint and batteries to complete. A small bench vice is recommended to build this kit.

32mm gauge only.

Dimensions

Length (over buffers): 230mm

Width (across cylinders): 86mm

Height (from railhead to chimney top): 126mm

Rigid Wheelbase: 48mm

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To aid towing, the model is fitted with a drop link coupling. It's supplied ready-to-run, just requiring painting in your preferred livery.

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Porterhouse Models

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PHIL SHARPLES MODELS

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Joining Phil's popular Estate railway range is a new locomotive kit, along with a coach and open wagon.

The loco uses a Hudson chassis design as a base with a small body and canopy roof. The roof height can be adjusted to suit your preferred driver.

The coach uses the same chassis as the other wagons in the range, so fits in well, offering two-man transport.

There is also a new Hudson Open Wagon kit, based on a Hudson chassis design with a steel type body and comes with some 3D-printed detail parts.

32mm gauge only.

Prices

Locomotive: £42

Coach: £9.50

Wagon: £12

P.S.Models

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INVICTA MODEL WORKS

16mm scale Darjeeling Hill Railway Trolley

The DHR has a number of these diminutive little, gravity-driven trolleys and there are photos of them loaded on flat wagons or tied to the back of a standard DHR to take them to the top of the line before they come back down again with speed only being controlled by the brake man.

Invicta's kit is laser-cut in 2mm MDF. It is a scaled-down version of the real thing, Invicta tells us there are a number of real ones and each one is slightly different.

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How to break a Peckett

The Editor has learned a valuable lesson about reading instructions - properly.

I've always considered part of my job is to make mistakes, so you don't have to. This one's a good one. Pay attention and don't do what I did.

Earlier this year, I took out the Accucraft Peckett I built on these pages last year, with the intention of giving it a run at the Warwick show. Checking the loco over, I noticed the reversing lever wasn't operating its valve. Worse, when trying to turn the wheels, nothing would move.

What could be wrong? With the loco supported upside down, I worked out that all the valves were stuck in the block. Properly stuck too. Much work with penetrating oil, and even some heat wouldn't free them up.

Stumped, I took the loco along to the show to see if anyone had an idea. My best guess at this point was that the steam oil had solidified while the model sat idle for three months. However, that was a guess – the loco needed to pay a visit to someone who knew what they were talking about, and so it was arranged for it to take a trip to visit Accucraft's service agent, Dave Mees of AbbeyBach Engineering Services.

A few weeks later, along with a video of my loco happily hauling trains on his layout, Dave explained what he had found.

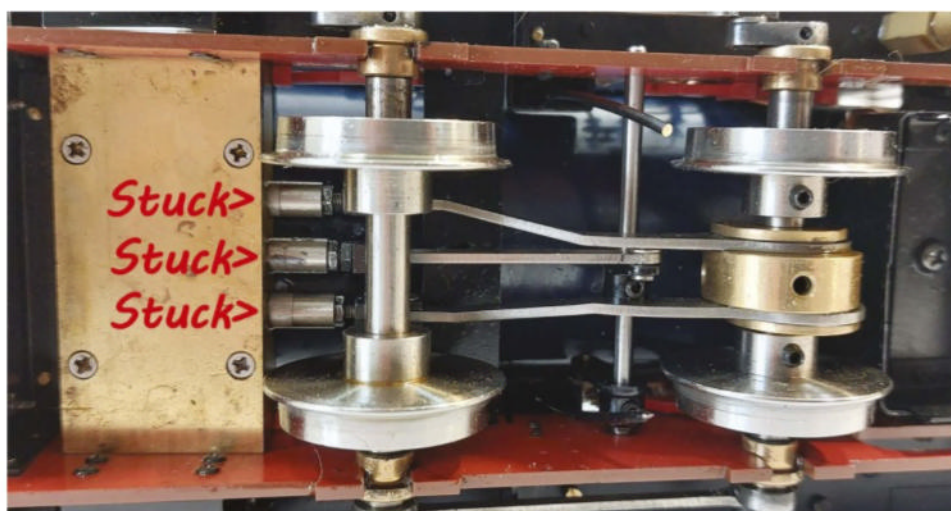
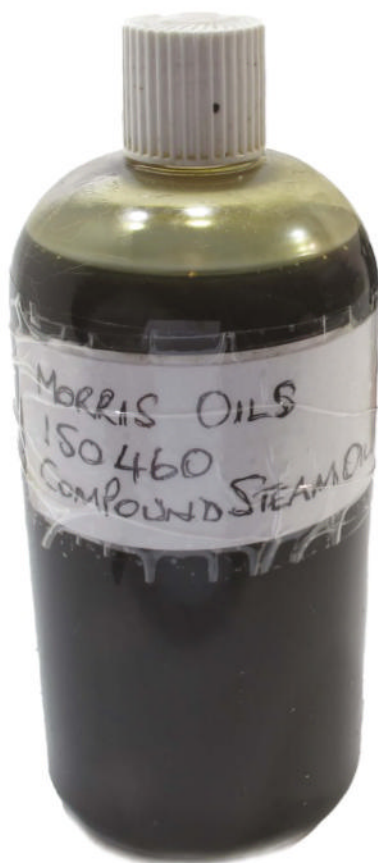
Basically, I hadn't read the instructions properly. In the instruction manual, in capital letters, in bold (so you know it's important); 'When filling the lubricator, always use a high-temperature steam oil (460 grade is recommended). Failure to use the correct grade of oil can lead to blocked steam pipes.'

Now, I had been using steam oil – I'm not that daft – but 1000 grade. It seems that this thicker stuff wasn't being pulled out of the lubricator. Instead, the limited cylinder lubrication was provided by nothing more than steam.

Dave stripped the loco down and extracted big gobs of brown oil from the system. The piston rings were replaced at the same time. Topped up with the correct lubricant, the loco now runs sweetly again.

So, the lesson is to use the correct grade of steam oil for the good of your locomotive. Accucraft locos have Gauge One tolerances, hence the thinner oil. I now have a big bottle of this and have promised to be a better owner in the future.

Thanks to Graham Langer at Accucraft and Dave Mees for sorting out the Peckett. ■



Looking underneath the model, all the valves were stuck. Properly stuck.



With the loco stripped down, Dave sent me a photo of the valves, which were lightly scored, thanks to the lack of lubrication.



Brown gobs of oil blocking passageways and not lubricating the cylinders.



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

MODELS AND PROTOTYPES



You were asking if anyone else had pictured their model with its prototype. I was at the LWR railway last Sunday and took this shot. Unfortunately, the white model against the white of the loco doesn't help, and also 'Mennock' is undergoing some maintenance just now, so it isn't a particularly good shot.

Eddie Lund

FLIGHT BOXES

In a recent editorial, you asked for photos of our 'flight' boxes. Well, how about this for the ultimate in luxury? It was made by a local member who made a number of them. As you can see, it has two compartments for water, gas, oil, etc., plus drawers for tools, and in the top left-hand drawer, it has a small battery-operated pump for filling up locos. There is a piece of shaped ply, which slides down nicely in front of the drawers for carriage. The bungee strap on top is for strapping the steam up tray to the back of the box.

As you can imagine, it is quite heavy, and I only use it for home use nowadays because I used to get the mickey taken out of it by other members of our group regarding the weight, and also it takes up a lot of space in the car. So, I now use the one in the other photos to take to meetings, and this allows space also for a backup electric loco.

Shirley de-Groome



BRIDGE LOADING

I was intrigued by Jim Smith's article on bridge building in the June *Garden Rail*, and admire his patience in making a lattice work type.

I was a little taken aback by his method of proof load testing. The carry box in the photograph looks substantial and would itself act as a sort of bridge so that the loading would be applied mainly at the ends of the box - not what was intended I think. Better to have taken the locomotive out of the box and place it directly on the bridge as a truly distributed load. There are many photographs of Victorian bridge engineers testing new bridges with a solid line-up of locomotives, this being generally about as much load as one could place on such a structure.

Mike Gray

LEAD FLASHING

I read in the March edition of *Garden Rail*, on page 22, an interesting article regarding lead flashing and 'what do other modellers use'. Photo No 13 is a classic case in point, and in this instance, I use tomato puree tubes as they can be worked like real lead, (to an extent) and I think they look quite good.

I cut the bottom of the tube and then, using old scissors, cut down either side and opened the tube up and gave it a thorough wash. I then cut the top off and, making sure it is absolutely clean, I then flatten it out on a hard surface, and Voila! You can now start carrying out your flashing work. I put the side with the writing on underneath and shaped and glue it with UHU, or something similar, and then painted it a lead colour, and don't forget to weather it if needed.

Please see the photos attached of O gauge buildings built by Bob Dawson in York, with added flashings and weathering by yours truly.

Jim Whitehead - Ebor Group of Railway Modellers



I'M NOT CALLED PAUL!

As large scale model railways is both a full-time job and a hobby, sometimes we enjoy a day out playing trains rather than working on a stand.

We certainly had fun at the National Garden Railway Show back in April. Taking our trusty Regner Lumberjack that we converted to 3 channel r/c last year, complete with very loud whistle. It ran around the extensive modular layout in the morning before a quick gauge change to later run on 45mm and claim the first live steam on 'Layout in a day' trophy, along with the front cover of *Garden Rail*. Good fun was had all around!

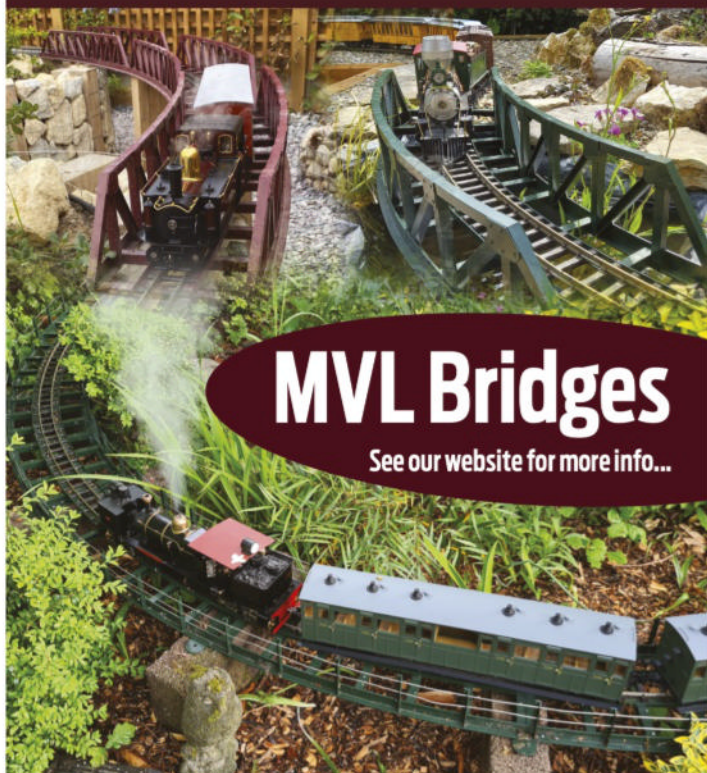
Only one complaint, you've credited it to someone called Paul!

Andy Spence

Editor: Sorry Andy. All the fun of the event must have scrambled my brain. Or maybe it was the whiff of live steam?



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Also, in our AUGUST issue:

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The model is gas-fired and fitted with a water top up valve, water check valve, miniature pressure gauge and lubricator; constructed of stainless steel and etched brass with a copper boiler, the locomotive has an enhanced level of detail made possible by this scale including a brake stand / gas control valve, dummy water gauges and sliding cab-sheet doors. It is gauge-adjustable between 45mm and 32mm gauges. The gas tank is concealed in the left hand side tank with the filler hidden under a dummy coal load, the Goodall top-up valve is hidden in the dummy sand pot on the boiler. The estimated UK pre-order is £1795.00 and the model will be available direct from us or through our dealers. Phil Mason has very kindly arranged that every customer who purchases a model of *Diana* will be entitled to a free footplate ride on the prototype locomotive at the Amerton Railway near Stafford.



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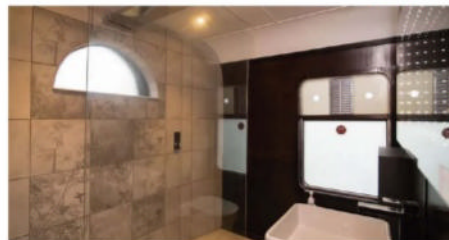
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