

The Garden Whistle

DECEMBER 2020



Merry Christmas

H & M GR. The End of an ERA

G Scale news from around New Zealand

CGRG President's Ramblings

Hi Team

Well Santa's little elves have been busy and if you have been a good boy or girl a present will be in your stocking at the end of the bed on Christmas morning

If you have been like me you will have a lump of coal, I want a lump of coal so all is good.

The silly season is here, please be careful on the roads and remember that others are just as stressed as you and I about where we are going, with whom and for how long

I am really going to enjoy Christmas day myself as I will get to spend a part of it with my Grandson, guess what we will be doing?

I wish one and all good tidings and a very merry Christmas from Nicola and myself as well as the good wishes from our Garden Group Committee and Convention committee

All is coming together nicely for the convention next year as you will see with my own works, lots of effort going in all over the place

We had the most wonderful Club meet at the Stanley's Place on Saturday last and I, the Grand Enabler (well second to Mr I Collingwood) assisted Bill's good wife in purchasing a Playmobil G Scale loco and wagon

As Bill said to Maggie, "You hit the buy now button, not me." Which is true, but with his blessing. It being the same as the wee one I was running on their Pirfic layout, perfect for the visiting children and their care givers (or parents if you will) which is why I got mine (that's my story and I am sticking with it)

We will be holding a Christmas gathering at the Galbraith's next month, details to follow

Enjoy the Summer to come with G Scale Trains

Toot Toot

Andrew Wilson

What's he up to Now?

Andrew Wilson, West Melton

A selection of photos showing the work I have been doing over the last couple of months

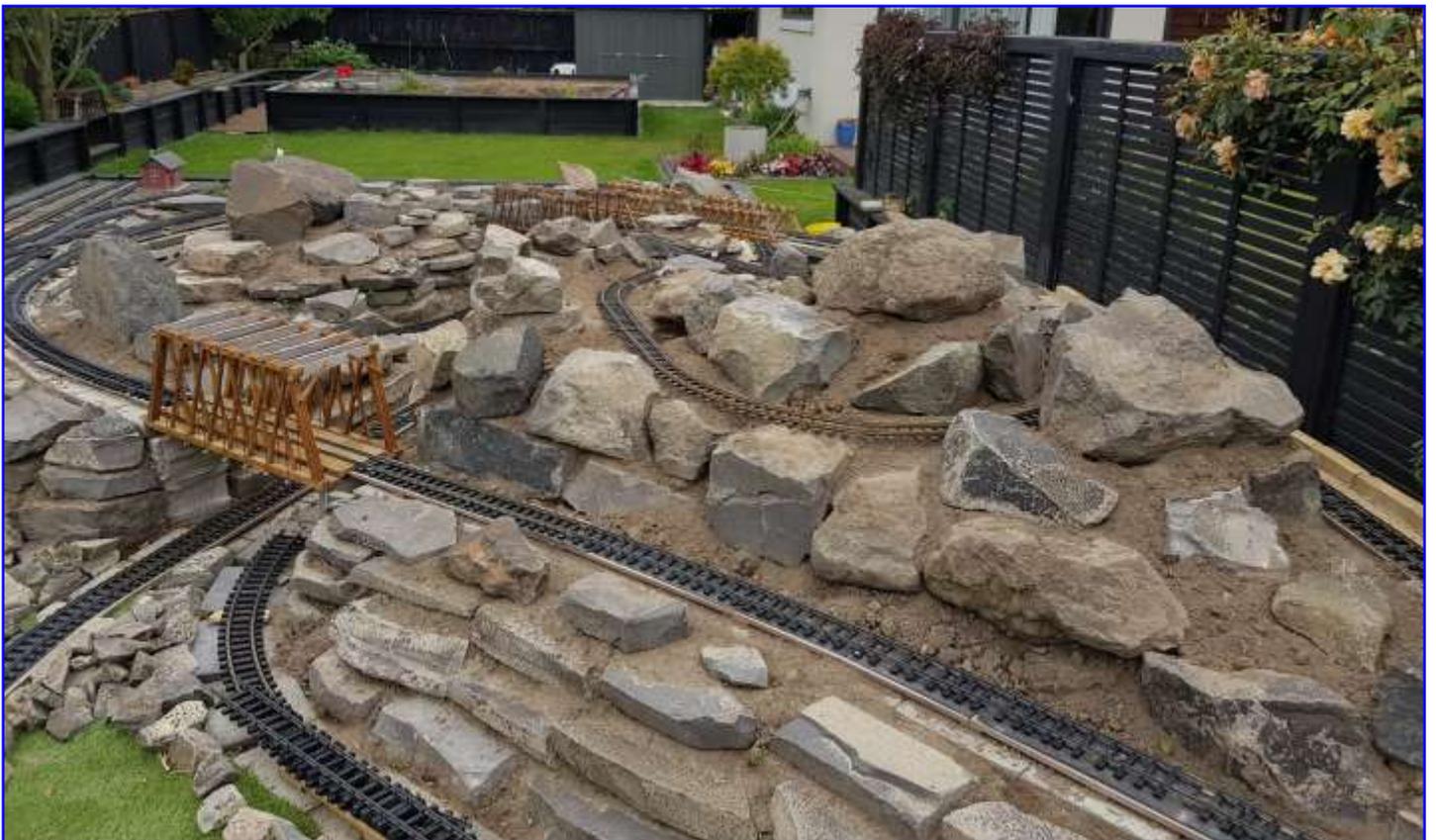
I am amazed myself when I look at the before and after, especially the pile of rocks that are no longer there

I am now at Electrical stage for track power and prewiring of point motors etc

Once that is done ballast and continued dressing of layout for convention. Lots of fun, it is finally starting to come together



THE GARDEN WHISTLE



THE GARDEN WHISTLE



THE GARDEN WHISTLE



CGRG Visit to The “Pirfic Railway”

On Saturday 21 November 2020 the Christchurch Garden Railway Group held a Running Day at Bill Stanley’s “Pirfic Railway” in Lincoln.

After threatening showers were forecast, the day was warm and sunny with 20 members enjoying an afternoon of train running and nattering.

Bills layout is battery power only and he had four trains running at the same time. Control was by Revolution R/c..

It was great to see how Bill’s layout has progressed

since our last visit on 18 August 2019.. The railway has some 200 metres of track, over 40 buildings and uncounted vehicles..

At afternoon tea Andrew Wilson thanked Bill and Margaret for hosting the Running Day and presented them with a certificate to mark the occasion.

Following this, most returned to the railway, picked up their chairs and moved into the shade for the rest of the afternoon. A great way to spend an afternoon.

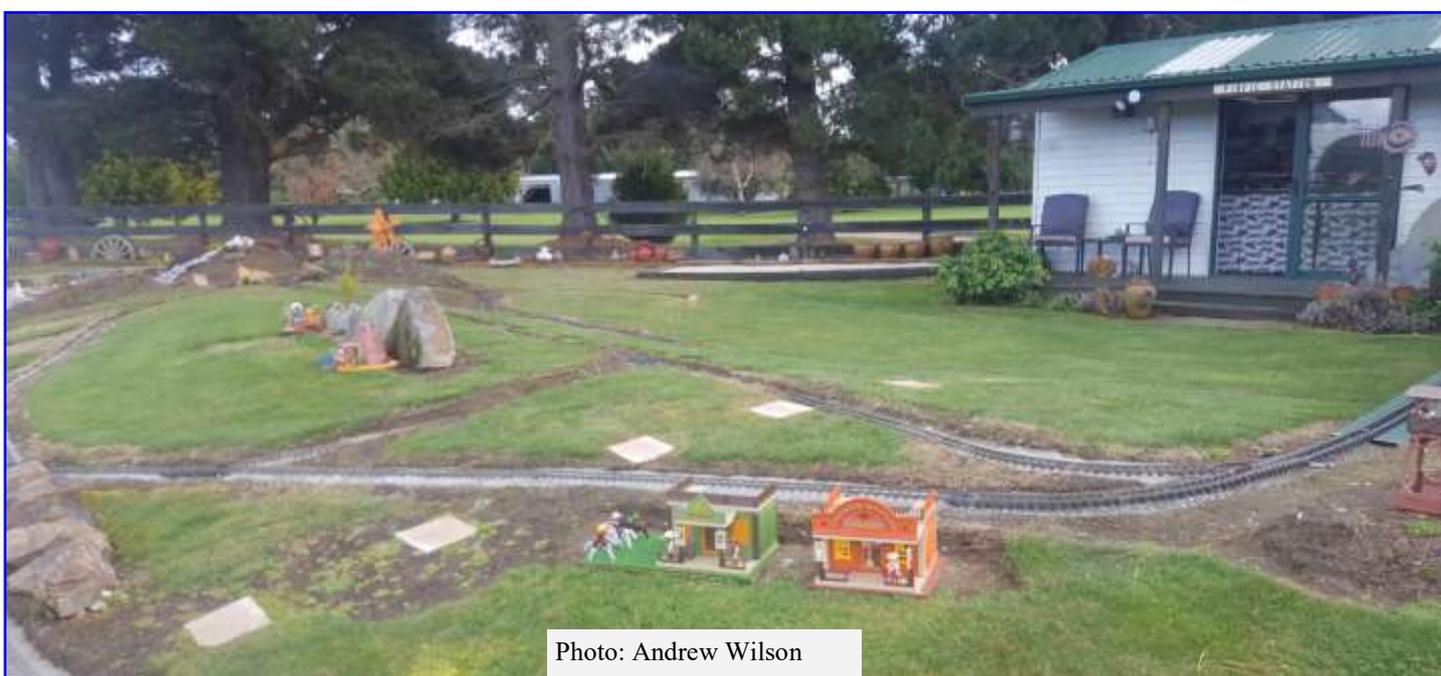


Photo: Andrew Wilson

Above: The railway on 18 August 2019

Below: The railway on 21 November 2020



Photo: Bill Stanley

THE GARDEN WHISTLE



Photo: Andrew Wilson



Photo: Andrew Wilson

THE GARDEN WHISTLE



Photo: Andrew Wilson



Photo: Andrew Wilson

THE GARDEN WHISTLE



Cadillac Ranch

Photo: Ian Galbraith



Liffey Cottage and Union Church

Photo: Ian Galbraith

THE GARDEN WHISTLE



Bill's Mogul and freight passing Lincoln Station

Photo: Ian Galbraith



Hackberry General Store (The original is situated on Route 66, Arizona 86411)

Photo: Ian Galbraith

THE GARDEN WHISTLE



Cracker Barrel Store & Restaurant beside the hotel

Photo: Ian Galbraith



In the shade watching trains

Photo: Bill Stanley

Masterton Garden Railway Group's Running Day at Brendon Clarke's.

Report and Photos: Lloyd Dickens, Masterton



Brendon Clarke's railway centre piece

Brendon's railway grew out of his father's railway being disassembled.

The railway is built raised, all at the same level. Ideal for live steam but no one brought one along.

The turn out was a little disappointing with most members being away. I ran my relatively new Isle of Man Railcars (ex Irish) as a twin set. This has only recently been possible after installing my control system receivers in both units. I am now able to make the individual railcars run at approximately the same speed. I also fitted the light diesel MyLocoSound unit to both units, sound great. I had a good run for most of the afternoon.

Murray, Brendon's father brought along a new Mallet and Brendon ran his American outline locomotives on track power.

Joan my sister in law brought along Thomas to entertain Lucas the 5 year old train enthusiast.

A great afternoon tea was provided. Thanks to the hosts for a great afternoon.

As a foot note:

I had installed the track power system about a year ago using low cost Chinese parts. One unit measured

the current and voltage. This had stopped working so a few days later I came along to see why. The photo replaces a lot of words. Clearly a large current surge has gone through the unit. At home I have gas discharge surge arresters purchased from Jaycar, to protect the workshop from a lighting strike on the track.

In Brendon's case it was not direct lighting strike but some kind of voltage surge through the earth. In any case the electronics has been fried.

I fortunately purchased two units so I replaced it. Protection is on its way.



Damaged voltage and current Meter



Brendon with Lloyd's Isle of Man Railcars



Brendon's Railway Station area

THE GARDEN WHISTLE



Brendon' truss bridge



Lloyd's Isle of Man Railcars emerging from the truss bridge

The AGRSI at Andrew Stevens' Layout

Philip Sharp, Auckland

The Auckland Garden Railway Society Inc (AGRSI) had an enjoyable meeting at Andrew Stevens' incomplete layout on Saturday November 21. About a dozen members attended. There was little train running. Most of the time was spent catching up and discussing the recent work Andrew had done on his layout and what he plans to do.

Andrew told me several weeks ago that he had not done much on the layout since the AGRSI's last visit over a year ago. It became clear two minutes after I arrived that Andrew had understated his recent efforts.



1

Photograph 1 shows part of the bank of 30 levers Andrew scratch built from aluminium channel, rod, tubing and bar and springs. The levers are not yet connected to the layout. Andrew will have air points and interlocking.

Photograph 2 is of an incomplete model of a 60' x 30' NZR goods shed Andrew is scratch building. Andrew made the strip wood using a table saw, a model saw and a thickness planer. Derek Cooper said he would not have the patience to cut all of that wood. I would worry about losing digits if I used the table saw (I am a mathematician). Photograph 3 is a close-up of one corner of the goods shed.

I went through my records and found two good photographs of the 60' x 30' goods shed at the old Greytown railway station. Photograph 4 shows the front of the restored goods shed in 2015, and

Photograph 5 (Les Hostick) shows the Greytown station precinct January, 1947. The goods shed is in the centre background.

Photograph 6 is of two, scratch built NZR water tanks. There are two weights on the top of each tank. Andrew noticed that the sun, of which we have plenty in Auckland, had warped the tops. The weights were a temporary fix. Andrew plans to put supports inside the tanks to hold the tops in place.

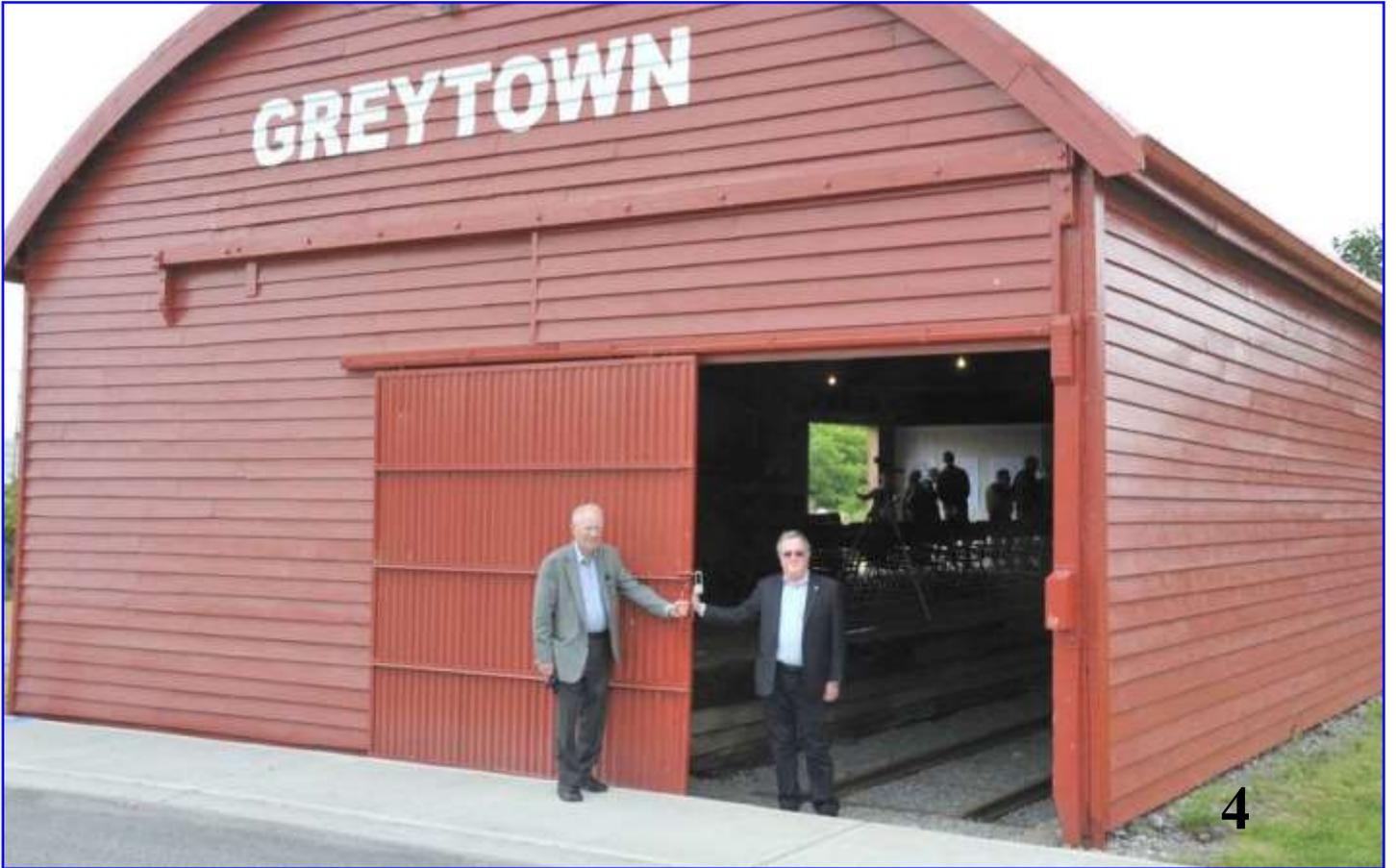
The final photograph shows part of the goods shed and the water tanks, and a scratch

built sheep wagon without the wheels and axle boxes.

As you can see from the photographs Andrew has a good set of construction skills. It is this point I will probably remember the most from the visit. I am looking forward to another visit in a year or so from now.

THE GARDEN WHISTLE





THE GARDEN WHISTLE





2021 Garden Railway Convention 6-8 February 2021

Registrations are being received now that the COVID-19 Alert Level is down to 1.

Airlines are now listing greatly reduced flight costs, so now is the time to register for the Convention and make travel bookings.

There will be eleven layouts to visit over the three days. Eight of these are new since the 2015 Christchurch. The other three have been updated. Some are track powered, while others are battery or steam operation only

Prototypes modelled include NZR, European, American in scales from 1:20.3 through to 1:24

Clinics/Workshops: These will include methods of weathering wood structures, Weathering models, setting up for scratch building

Trade Stand and Buy, Sell; & Swap tables will be provided

Register now for the discount Registration

2021ngrc@culcreuchfold.org.nz or 021 2646 945

DUNEDIN MODEL TRAIN SHOW

Taieri Bowling Club, 12 Wickliffe Street
Mosgiel

8th & 9th May 2021
9.30 am - 4.00 pm

Adults \$10, Children [under 12 years] \$1,
Family [2 Adults & up to 3 Children] \$20

EFTPOS
Available

Michel Duval
2017

Printing an F Class saddle tank Locomotive

Text and photos: Douglas Wall, Christchurch

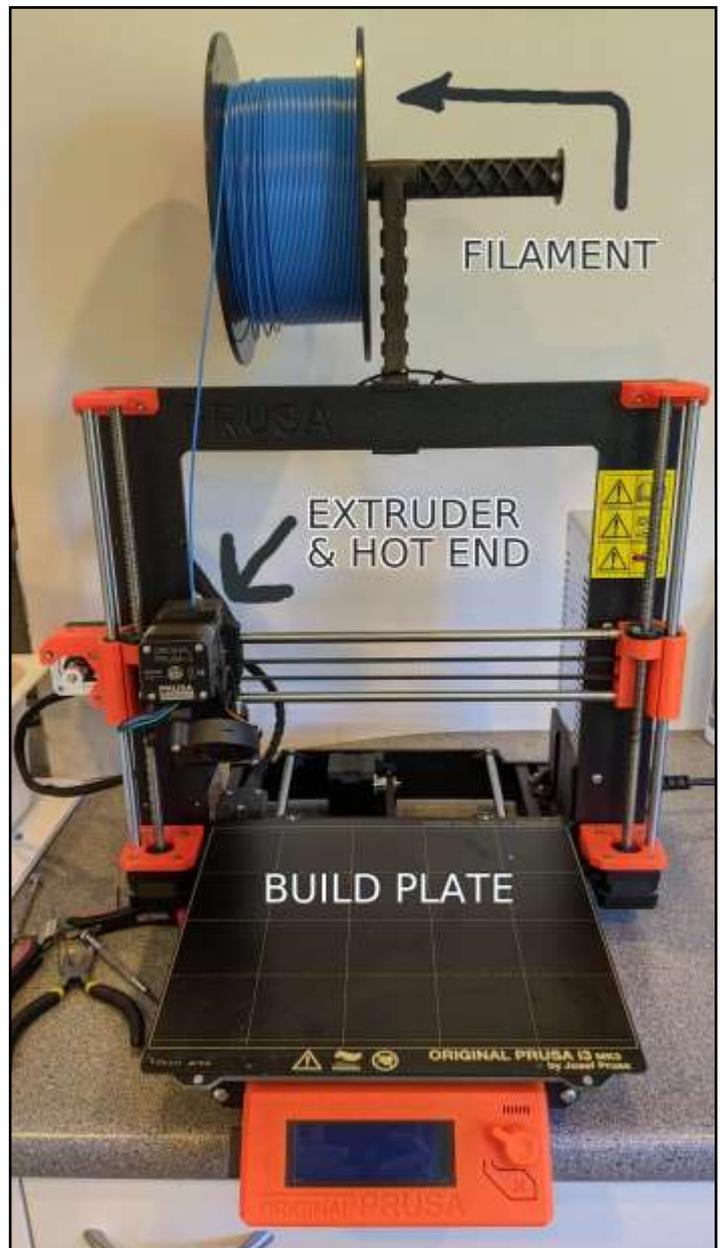
At the request of Andrew Wilson, I have been attempting to 3d print a suitable 1:24 NZR F class loco for a future display at the Little River Station Museum. I am using files supplied by Andrew for the purpose, rather than designing something from scratch. My CAD (computer aided design) skills are not yet up to par for that challenge.

First, a basic run-down on how home 3d printers function for those who may not be aware. I am not an expert so do your own research if you feel that's required. *See the links at the end.*

There are two common production methods used in hobby level 3d printers: Fused Deposition Modelling (FDM) also sometimes referred to as Fused Filament Fabrication (FFF). The other is Stereo-lithography Apparatus (SLA). SLA has a couple of sub variants within it that I will only outline in brief. SLA printers tend to be commonly referred to as "resin printers".

Both methods build up an object layer by layer. Think of it as though you had sliced a potato in to very thin horizontal slices and now you're reassembling that potato by laying the slices back down in order, except that you're gluing each slice to the next. In that example the "potato" exists as a computer generated object until you use a program to prepare it for printing. That program is called a Slicer. Slicing is also the term used when that software chops up the virtual potato ready for the printer.

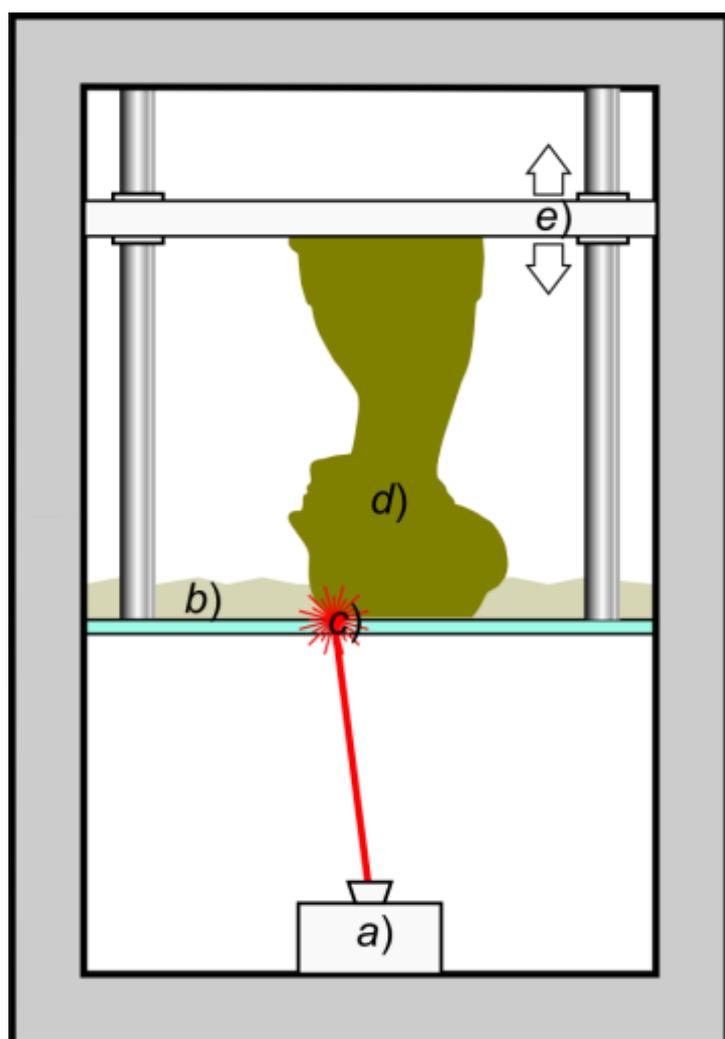
FDM printers use filaments of plastic to produce the object. These filaments are essentially rolls of plastic wire - common diameters are 1.75mm and 3mm. They come in a very wide variety of colours and plastic types. The FDM printer prints each layer on to a "build plate" or "print bed" (flat plate) by melting a continuous feed of filament then drawing the layer with that molten plastic, similar to how you would draw something with a pen. Then it moves up a tiny amount and prints the next layer on top of the first in the same fashion. This process continues until the object is completed or fails for some reason. Following, you can see a photo of my printer.



The mechanics of how the plastic is pushed through the "hot end" (the piece that melts the filament) and then is extruded in the correct location on the build plate vary in design. Generally, the hot end will move in one or two axes and the build plate will move in the remaining directions). With my FDM printer, for example, the hot end moves up and down (Z) and left to right (X). The build plate moves forward and backwards (Y), hence all three dimensions, XYZ.

SLA printers generally work upside down compared to FDM (there are exceptions). Their build plate is

mounted upside down and moves up and down only. They use a UV cured resin, which starts as a liquid, placed in a vat that has a transparent bottom. The build plate is lowered into the vat of resin until it is almost touching the bottom. This is where there are two different ways of curing the resin into a solid layer. The first is with a laser that shines up through the transparent base and draws the pattern of the layer, curing the liquid as it goes to form a solid. The alternative and generally more popular method (it's cheaper to make) is to use an LCD screen similar to a smartphone or tablet (some of them are exactly that) to create a masked image. With a UV emitting LED lamp behind the screen you can project the whole layer pattern in to the resin at once. The following diagram from Wikipedia may help you visualize the process.



https://upload.wikimedia.org/wikipedia/commons/d/d6/Schematic_representation_of_Stereolithography.png

Scopigno R., Cignoni P., Pietroni N., Callieri M., Dellepiane M. (2017). "Digital Fabrication Techniques for Cultural Heritage: A Survey". *Computer Graphics Forum* **36** (1): 6–21. DOI:[10.1111/cgf.12781](https://doi.org/10.1111/cgf.12781).

In either case, once a layer has been cured the build plate moves up a fraction to make space for the next layer. This process continues until the object is complete. However, it will require further steps, as the resin will not be hard cured straight out of the printer. It needs to be washed with Isopropyl alcohol, then fully cured under direct sunlight or in a dedicated UV curing booth. I don't own a resin printer so I can't comment directly on usage experience, but I do know they're messier and the resins are more expensive than filament plus toxic to some degree.

DM printers are broadly quicker than SLA, though neither are fast to print. Some advantages of FDM over SLA are:

- Often little to no post processing.
- Many colours and types of plastics to choose from.
- Lower consumable costs, generally.
- Can be totally non toxic, dependent on the filament used. Some filaments do produce unpleasant fumes when printing though.
- Big objects can be printed more cost effectively. Large volume SLA printers are expensive, even at the hobby end of the scale.
- Prints can be much stronger than even the strongest of resins available on the hobby market (to my knowledge).

SLA has a major advantage over FDM: precision. Resin printers can produce very fine detail with usually no layer lines visible. Naturally the finer the detail, the weaker it will be. For G gauge modelling purposes, they're superb for small to medium detail parts, small buildings, very short rolling stock and

THE GARDEN WHISTLE

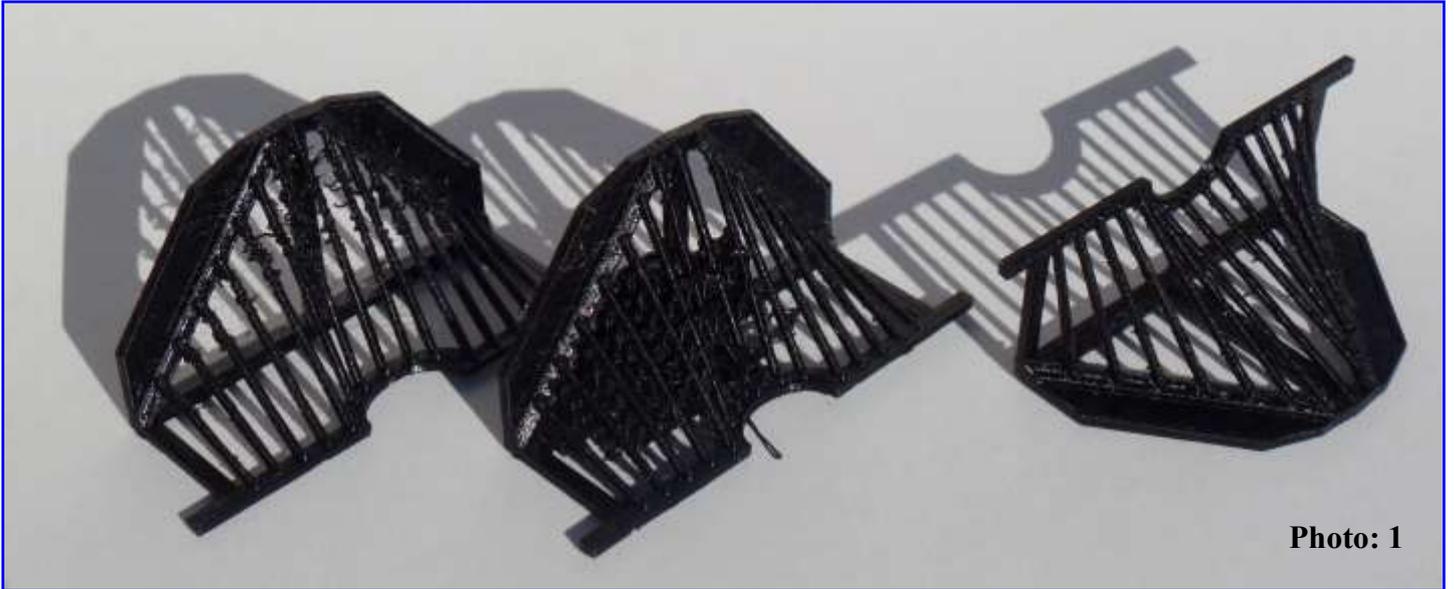


Photo: 1

figures. In smaller scales one could easily print whole or near complete pieces of rolling stock and buildings in resin alone. Many companies worldwide offer FDM and SLA printing services on industrial machines and produce very good results, at a price of course. There are some NZ businesses that also have these services.

Now, to the actual prints I have been attempting. I have generally been considering all of them prototypes, though some parts would be fine to use in a final model. I have mostly experimented with best

print orientation (which way up it is on the build plate) and reducing the part count to ease final assembly. All objects so far have been printed with a layer height of 0.15mm and a nozzle diameter of 0.4mm.

I started with the cow-catchers. Andrew requested a black base colour, so apologies for the photo quality. As you can see from **photo 1** things started out a bit rough. The plastic I used here is PETG. Essentially a modified drink bottle plastic. It has some flex, and it will stretch to some degree, so it won't shatter if you

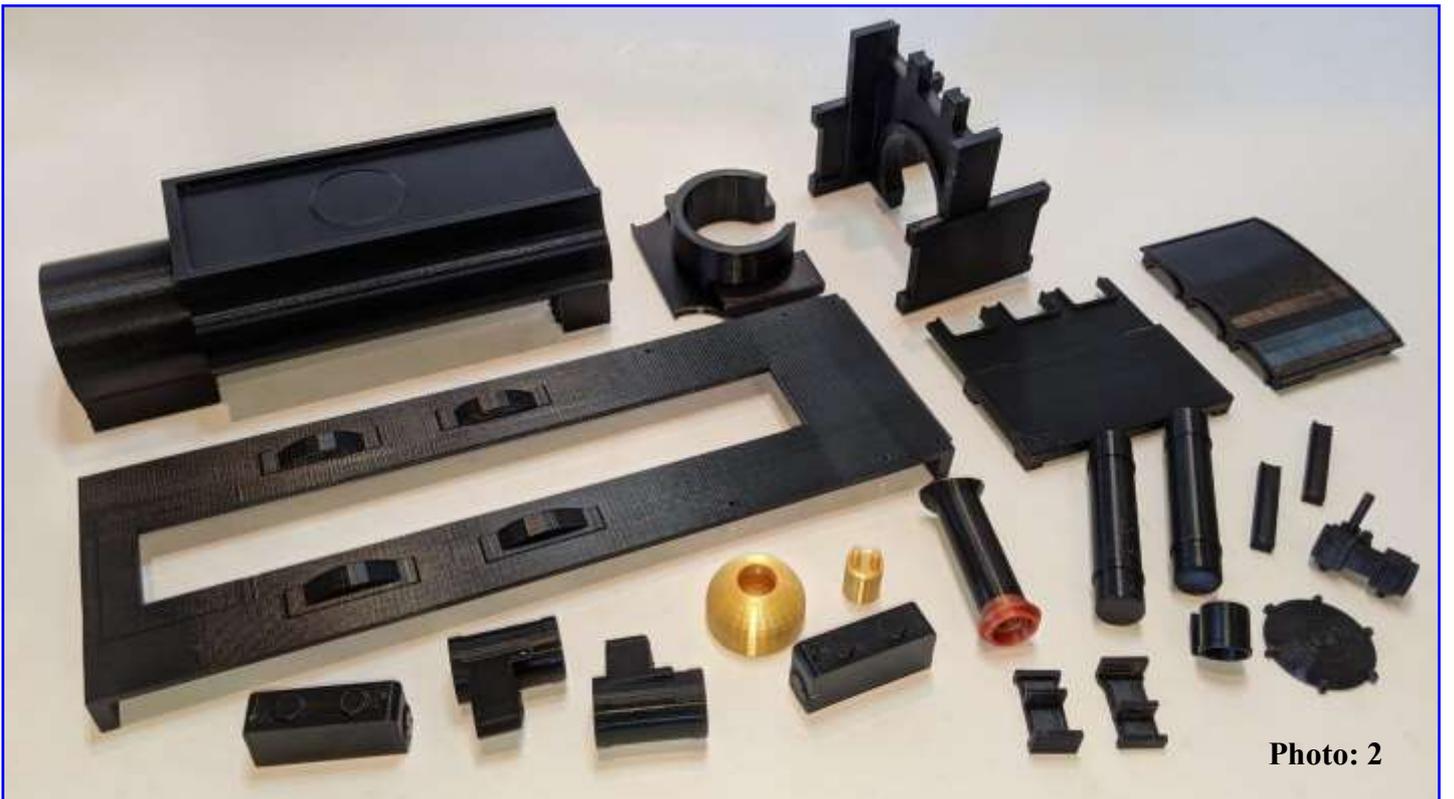


Photo: 2

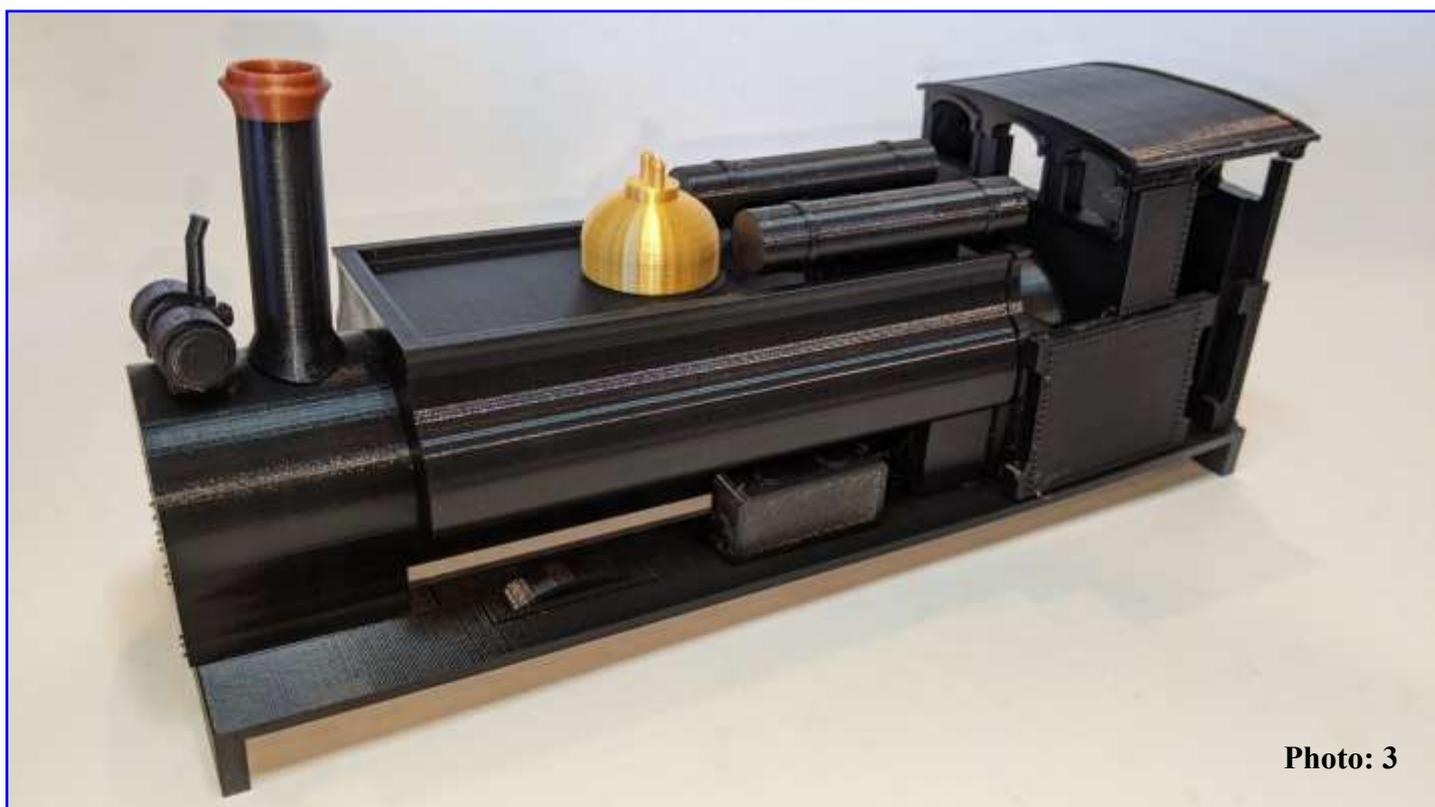


Photo: 3

nudge it, but it's not super strong. You can see how fuzzy/stringy the one on the left is. This is a result of the bars flexing as the hot end was trying to stick the next layer down on to it. I found printing them with the front facing up worked better. The middle one has still got some support material stuck to it, which unfortunately is difficult to see, but it cracked a couple of bars as I tried to remove it.

The support material is just the same plastic but printed as fine vertical walls that the main print rests against or is printed directly on to. It's to be used to solve issues like the flexing bar problem, overhangs and pieces of prints that would otherwise start printing in mid air. Generally, I try to minimize the amount of support material, as it can be tricky to remove cleanly, uses up more filament and adds time.

The right most cow-catcher seemed to be about as good as I could achieve, which is disappointing. I will revisit the problem, and try a different plastic. Perhaps ASA (like ABS, but easier to print. ABS likes to warp) or Polycarbonate, which would be much stronger but may reduce detail. For now I have produced a couple of cow-catchers that are workable for a static model.

In photo 2 you can see most of the parts for the body shell of the F and in photo 3 it's loosely assembled. This plastic is Polylactic Acid (PLA). It is the easiest plastic to print, produces good detail and is quite strong. It is not particularly flexible though and will break rather than stretch. It also becomes soft at only ~60 degrees, so don't leave it in a hot car or blazing sunlight without protection of some sort. Long term UV stability is questionable and seems to vary per manufacturer.

I spent quite some time digitally "chopping and sticking" sections together to get the print orientation I wanted. I will get to why that can be important later. The boiler and tank section (left upper) was printed vertically, standing on its end, along with the cab roof (right upper). The footplate/running boards and buffer beam section (middle) was printed on its long edge (sorry didn't get a photo) but warped ever so slightly across the buffer beams as it neared completion. I attempted to straighten it by applying hot water and gently working it. I got it near straight again but the sides contracted in as it cooled, giving the ends a slightly tapered look. Adequate for a static model but it did prompt me to attempt a different solution.

Plan B was to chop the shell longitudinally, producing left and right halves. This can be seen on

THE GARDEN WHISTLE

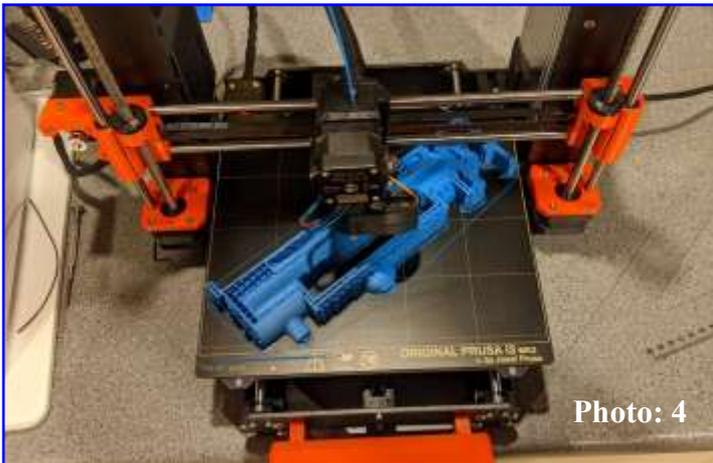


Photo: 4

the printer bed during printing in photo 4. You can see I had to cut the funnel and also the cab roof off to fit it on my printer's build plate. Note the amount of support material (the small, parallel vertical walls) required to keep all the internal surfaces and overhangs from collapsing. The finished print, not yet removed from the build plate, is in photo 5.



Photo: 5

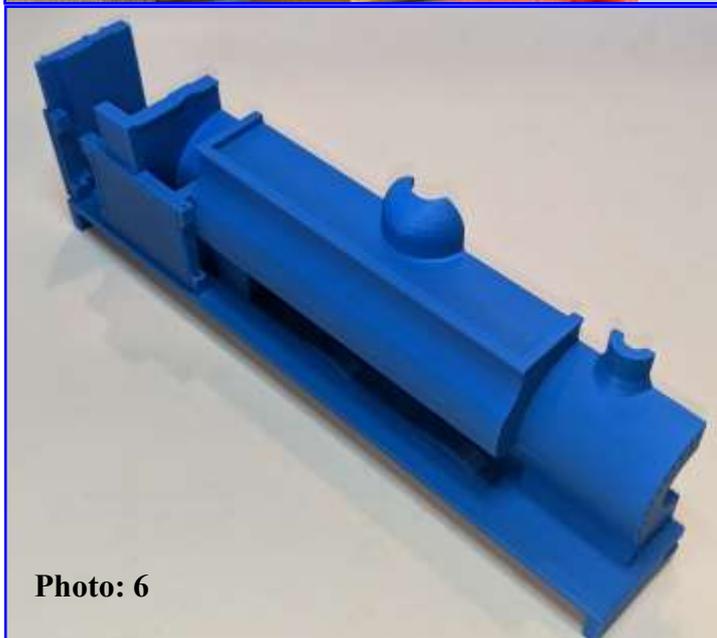


Photo: 6

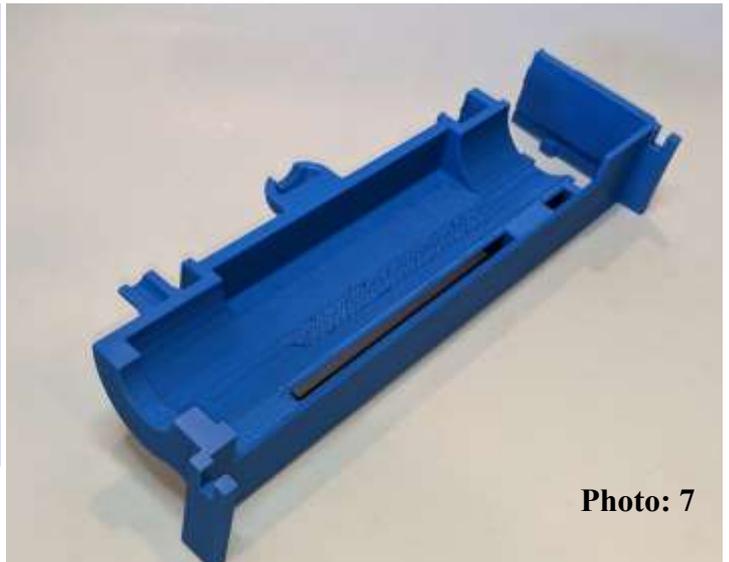


Photo: 7

Photos 6 & 7 show the completed half shell with most of the support material peeled away. Here you can see layer lines in the running boards and striations in the curves. Curves are why I printed the first boiler, tank and cab roof vertically. That way the hot end draws the curves, rather than building it up in layers, as it has done here. Think of making a curve by smoothly bending a piece of metal strap versus simulating the curve by stacking bricks. The taller the layers the blockier it looks. This is where an SLA printer would typically produce a very smooth looking curve, with no apparent striations, simply because they print finer layers in all 3 dimensions, say 0.05mm. Note that many FDM printers can print that fine, mine included, but the print time rises dramatically. For reference, this half shell took almost 18 hours to print at 0.15mm.

Photo 8 shows a comparison between the vertical and horizontal orientations. Again the black doesn't lend itself to displaying detail, but I can assure you it is

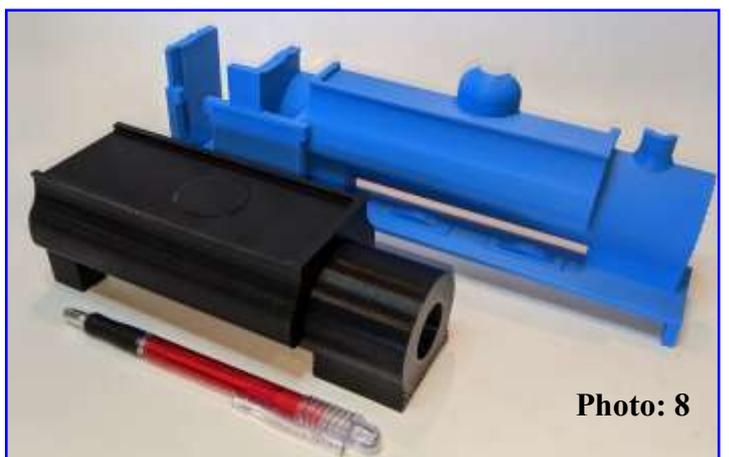


Photo: 8

much smoother in appearance and to the touch than the blue half shell. Still, some high-fill primer and light sanding would hide most of the issues on the half shell.

My intention from this point is to attempt a lower layer height, perhaps 0.1mm for the half shell and see if that effectively reduces the striations. I won't print the entire half again, just a short section of the smoke box. Long term I hope to work up my design skills and attempt to produce a few custom items.

Links:

https://en.wikipedia.org/wiki/Fused_filament_fabrication#Fused_deposition_modeling

<https://en.wikipedia.org/wiki/Stereolithography>

Another Building for “The Pirfic Railway”

Bill Stanley, Lincoln



When ever Bill and Margaret Stanley visit the USA, they include in their plans a visit to a Cracker Barrel, so a model of a Cracker Barrel Store was required for “The Pirfic Railway”

Windows, door and barrels drawn in Fusion 360 and printed on an Ender 3 by Ian Galbraith

(Cracker Barrel Old Country Store, Inc. is an American chain of combined restaurant and gift stores with a Southern country theme. The company was founded by Dan Evins in 1969; its first store was in Lebanon, Tennessee. The corporate offices are located at a different facility in the same city. There are stores in 660 locations)

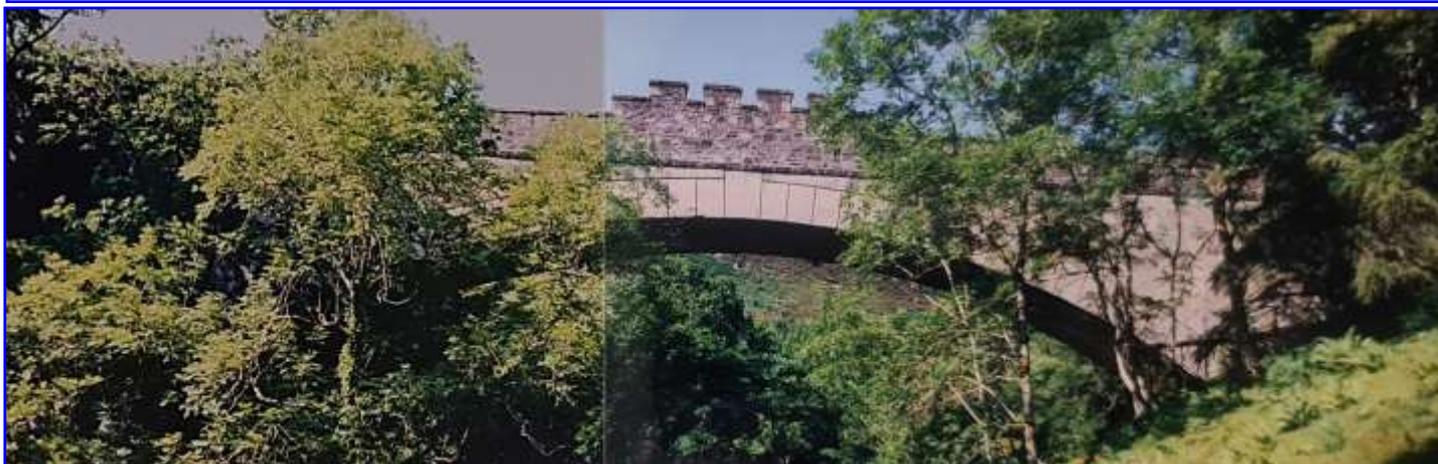
WANTED

Jim Staton is looking for some log bogies, principally Bachmann G gauge 98490, also a Bachmann heisler logging locomotive - not the one with the outside cranks though, already have one of those.

Contact Jim: 0274 433 551 or staton.jim@gmail.com

Borrodale Viaduct 1 Background and the Main Casting

John Boyson: Pokeno



The viaduct shrouded by trees. This photo montage was taken during my visit to the viaduct back in the 1990s before the days of digital cameras.

This article has been prepared for joint publication in the Garden Whistle and G1MRA NZ newsletter. Photos and plans provided by the author.

Borrodale Viaduct is one of the more interesting bridges on the West Highland Railway. It lies on the Mallaig Extension from Fort William. It is located on a 12 chain curve and has a main span of 127 feet with a rise of just 23 feet. However the burn it crosses, lies about 80 feet below rail level in a deep gully.

As with most other bridges on the line, it is constructed using mass concrete. It is historically important as the first example of a modern concrete bridge to have such a long and flat span. It is thus recognised as the start of the widespread use of concrete bridges we are familiar with around the world today.



These days, the viaduct is largely surrounded by vegetation and is located a reasonable distance from the nearest road. Additionally there is no track. So to visit it, I had to cut across country through heather, bracken and bogs with a certain amount of map reading required to locate it. The gully is not accessible, so the best approach is from the rising ground above the viaduct. The railway goes into a tunnel below where I am standing for the right photo. Given its historical importance, it deserves more recognition. Sadly nowadays, public values being what they are, the nearby Glenfinnan Viaduct, whilst significantly larger and, definitely more visible and accessible, receives far more attention mainly due to its use in the Harry Potter film franchise rather than any historic significance

The reasons for this are tied up with Scottish history which does not reflect well on some of the parties involved.



Historically, the Scottish Highlands operated under a feudal system much as England did before the industrial revolution. The controlling landowners (typically Lairds) managed their estates and the folk living on those estates were entirely dependent on the goodwill of the owner. In the 17 to 1800s a significant number of these owners forcibly cleared their lands of their tenants for a variety of reasons generally revolving around economics. A genuine part of the problem was overpopulation due to population growth without sufficient resources in the region to sustain the people. However there were also cases of cynical profiteering by using the land made available for more intensive farming. Most people, deprived of their homes (more than a few were simply burned to the ground) and unable to sustain themselves, were forced into emigration around the world leaving their homelands behind with nothing. To be fair, some of the landlords wrote off their tenants outstanding debts and paid for the passages of the displaced families. However others provided no support at all.

The event is referred to this day as the Highland Clearances. Many of those who remained, found themselves living a life that was ultimately no longer sustainable with widespread famine and hardship.

The end result today is the Highland glens are relatively unpopulated

After some time, the London based Parliament of the day realised (it took over a hundred years!) that the remaining people within the Highlands urgently needed help. So they undertook surveys of the region to determine how to improve things. One of the key elements identified was a lack of effective transport particularly north and west of the Great Glen between Fort William and Inverness. Since the local communities were in no position to finance railways in the affected areas, and the railway companies in the vicinity were not willing to solely promote the lines themselves (being regarded as unprofitable), it followed that the only way to get a railway built in the area was to subsidise it with public money. Thus was born the Mallaig extension which eventually gestated with financial support from the Crown after no small degree of political debate and reluctance from certain parties (of six railways recommended for the region to improve things, only two got built!).

The second element of this story is the geology of the area. It is mountainous with much broken terrain. The local rock is also particularly hard and brittle. As such, when the cuttings and tunnels needed on the line were constructed, the rock blasted out tended to shatter into small fragments. This is also why the planned two tunnels for the line turned into eleven. The rock was thus unworkable for stonework as used on the main line from Glasgow to Fort William. However it was ideal for making concrete. As luck would have it, concrete as a construction material was making a resurgence at the time of the line's making, having been used to some degree on the main line already. Thus, it was an obvious choice for the structures of the Mallaig line.

The third component and the really pioneering element displayed by this viaduct with the length of its main span, again relates back to the issue of wealthy landowners and their excessive influence. Bearing in mind that the line was being publicly subsidised, the railway was built as cheaply as possible given the difficult terrain it traverses. This reflects in the austere form of the structures on the line which are plain and without any ornamental features even in the most visible and scenic locations. They are also mainly formed of multiple smallish arched spans (generally 50 feet with a couple of exceptions) within the limits of the developed use of the mass concrete at the time.

However at Borrodale, which is tucked away out of sight of any reasonably publicly access area, the affected landowner demanded

THE GARDEN WHISTLE

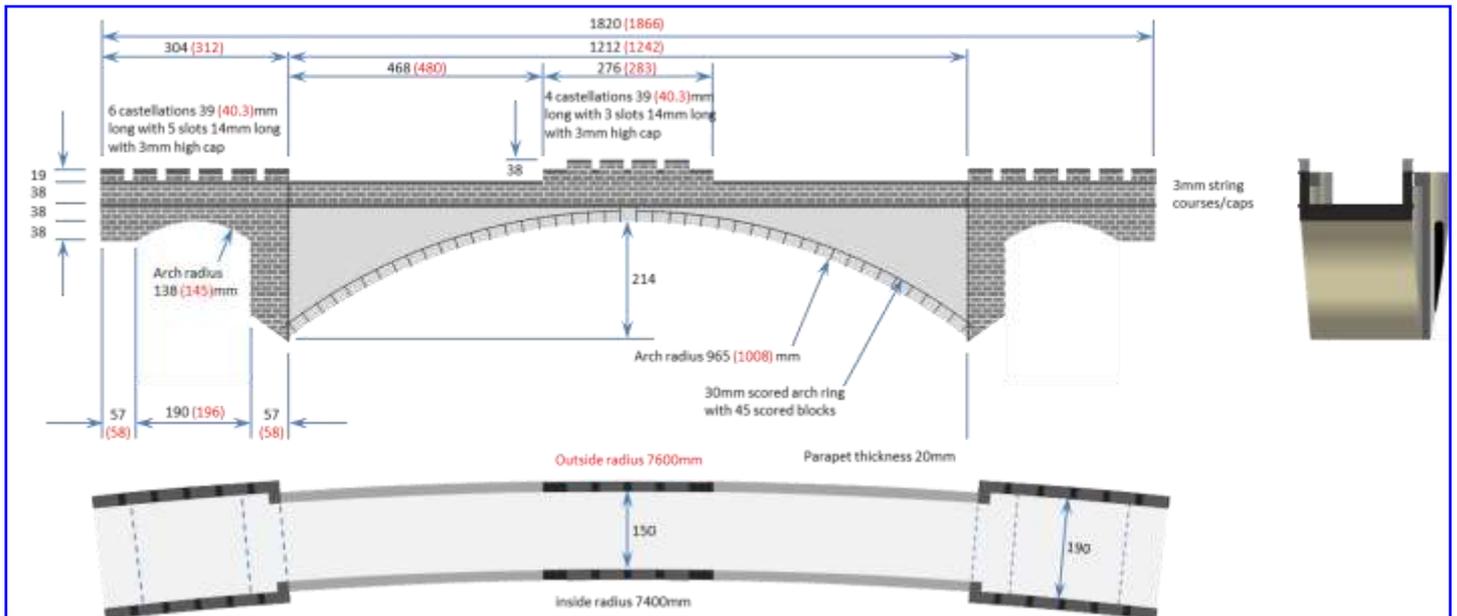
that:

No piers were to be used to bridge the gap within the gully unless expensively clad in stone (the two side arches are really high level accommodation crossings) and,

The viaduct was to have a decorative stone and castellated finish to its parapets and abutments including the side arches.

All this solely for his own benefit and at some cost!

Thus the concrete span, which was unprecedented for the day, had to cover the complete gap of 127 feet in one go. It is also located on a curve in the railway which, being such a long span, is quite apparent within the span. Thus the radius and span length of the outside face of the main arch are slightly bigger than the inside face to maintain the same arch rise on both sides. The plans below should provide clarity on this.



The plan show the curved outline of the viaduct. The dimensions in red are for outside face

Surprisingly, the viaduct is not reinforced, despite knowledge of the benefits of reinforced concrete being available at the time it was built.

To put the engineering importance of Borrodale into context, when Brunel built the Great Western Railway main line from London to Bristol circa 1840, he had to bridge the River Thames at Maidenhead. To provide sufficient clearance over a reasonable width for river shipping without unduly elevating the line, he too had to design a bridge with exceptionally flat arches (there are two spans). He used brickwork for his bridge. However the arches are much flatter in the centre than the sides since they are elliptically arched to achieve the required shipping clearances over a reasonable width. Interestingly, dimensionally the spans and the rises of both bridges are roughly the same. Coincidence? Who knows!

What is certain is that the flatness of Brunel's spans initially caused great concern to the authorities, so he was not allowed to remove the support centring. Sneakily, having confidence in his design, he instructed the contractor to ease the supports fractionally without telling anyone else so that the arches were actually self-supporting without it being obvious. Eventually a winter storm caused the centring to collapse leaving the bridge standing, thus proving the feasibility of his flat arches. This all happened about 60 years before Borrodale was built which took similar principles to the next step with the use of concrete.

The positives of all of this in the case of Borrodale are an exceptionally ornamental and spectacular bridge, albeit not easily accessed or viewed, and a major step forward in the development of concrete structures for which the Mallaig line is justifiably well known.

The viaduct lies on a 12 chain radius curve which the model follows at a scale of 1:32. This gives a radius of 7.5 metres. Given the length of the span, anything less than a scaled copy of the prototype radius would look strange with the lateral overhang of the arch. Thus the proportions of the model are faithful to the prototype.

The model is made from cast mortar reinforced with the leftover perforated stainless steel sheet from Craigenarden Viaduct (I wasn't game to follow the prototype in this regard!). Sheets were cut out to the profile of sides including the side spans and parapets. These had to be kinked at each end to follow the viaduct step outs between the main and side spans.

A sheet was also cut out to run along the top of the deck. Finally two shorter sheets were cut out to follow the profile of the underside of the main span on each side.

The photos below show the sequence of construction:



The main arch boards cut out for one face. The lower section will be used to form the arch support centring whilst the top half will form the mould side. A second panel was cut out for the other side. A jig saw was used for this cut since the curve would have been too sharp for the circular saw to follow



One of the mould sides being formed with the two side span panels being glued to the main span panel.

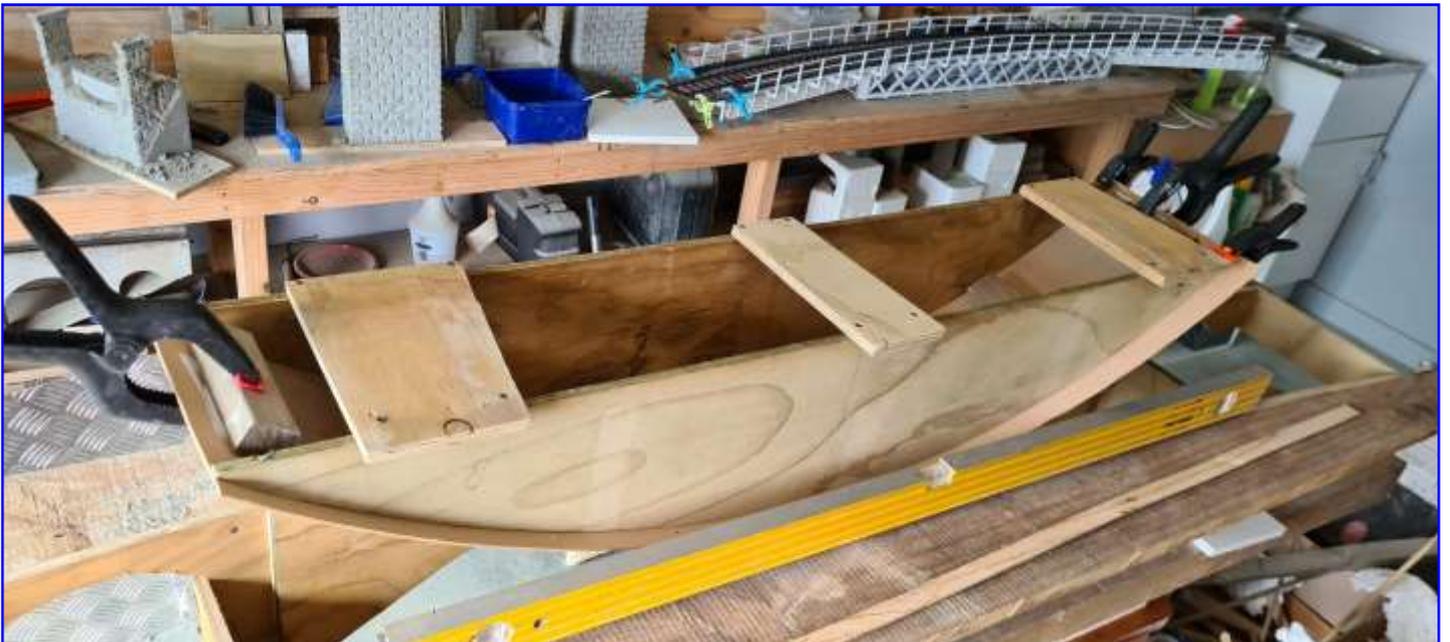
THE GARDEN WHISTLE



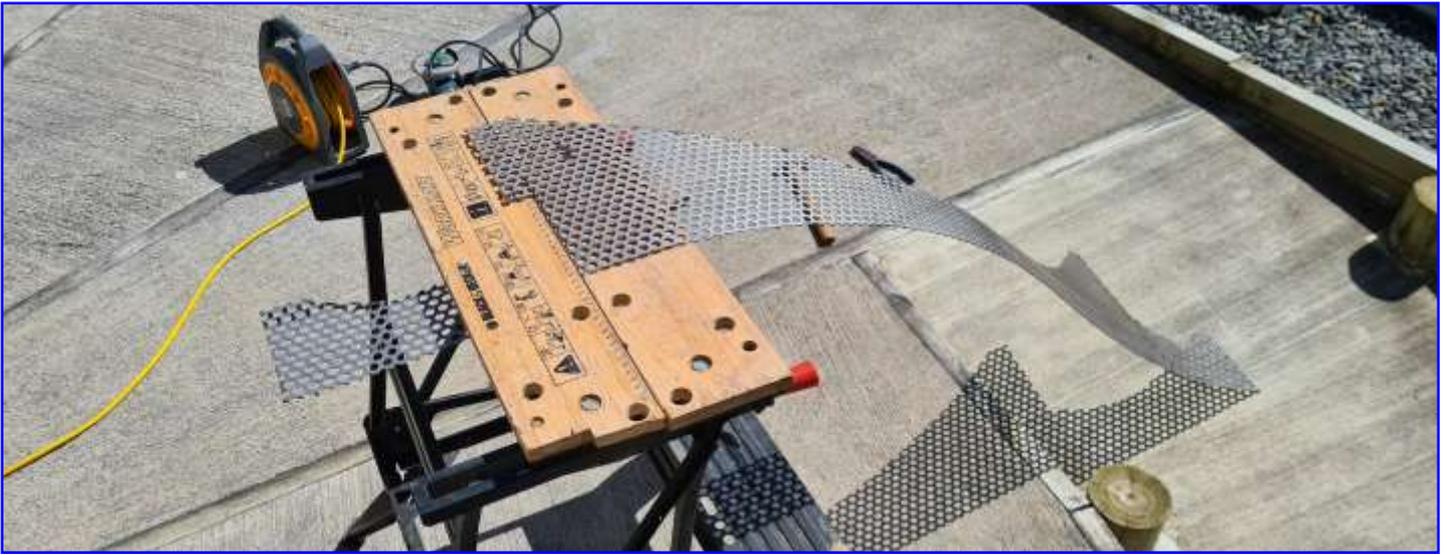
Cutting out the side bracing to form the horizontal curve of the viaduct. The plank is clamped to the workbench with the cutting point lying between the two jaws of the bench. The circular saw blade has been raised so that it just bites through the timber. In this way it clears the steel frame of the work bench (important!) and also it can more easily follow the curve of the viaduct.



The two mould sides have been screwed to their respective braces and the side span cross members have connected the two sides together as a complete stable unit.



The main span centring being fabricated from the two cut outs shown previously and an MDF sheet to form the soffit. This is being cross braced with glued timber offcuts to mitigate sagging when the mould is filled.



The perforated stainless steel mesh cut out to form one of the side reinforcement panels. The side span sections are being bent out to follow the viaduct widening over the side spans. This was done by cutting a groove along the fold lines (akin to the fold lines in an etched brass kit). The double fold was then achieved in the workbench with some forceful encouragement.



The mould nearly ready for concrete. The three sets of centring for the spans are installed and the end cross pieces are screwed into place. The reinforcement sections are being held at the correct level by three cross tubes threaded through the appropriate perforations. The remaining jobs are to brace the reinforcing horizontally to ensure it stays in place and clear of the mould sides whilst the mould is filled.



This is what I call heavy duty modelling. It took three of these barrow loads to fill the mould!

THE GARDEN WHISTLE



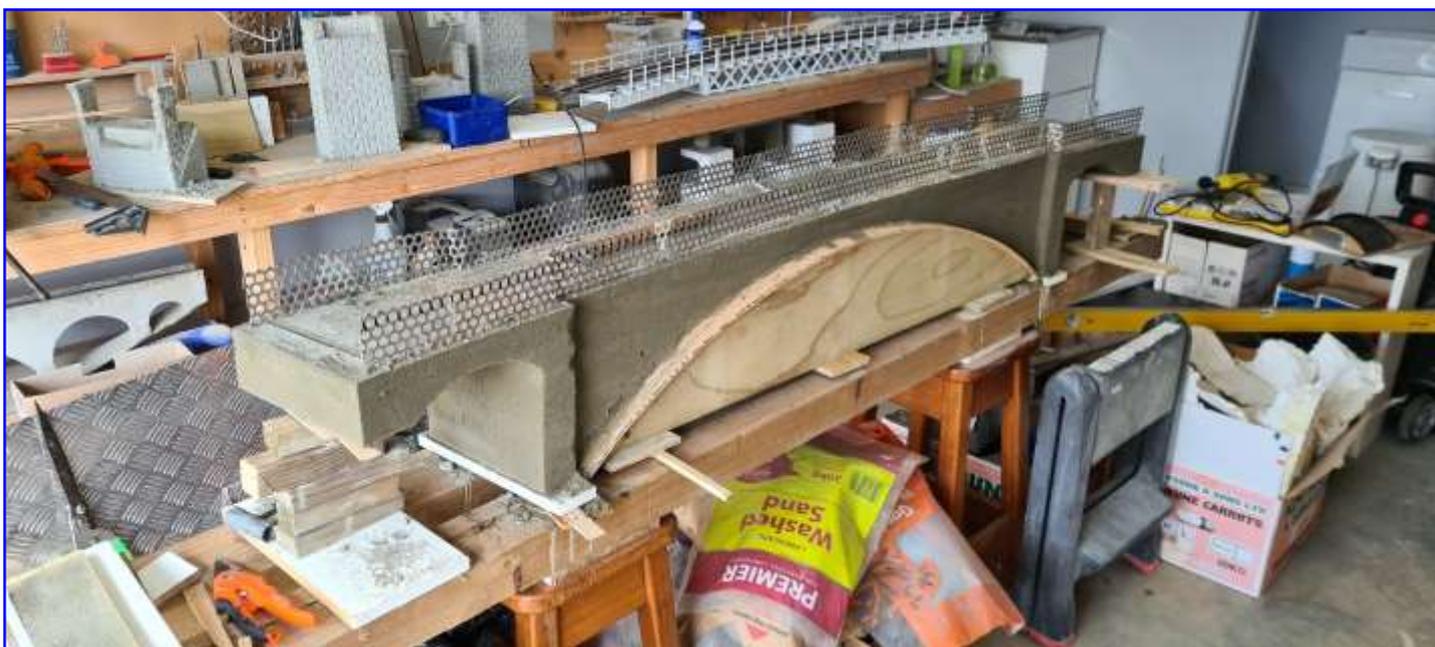
The mould being filled. I firstly filled both sides of the main span evenly to ensure nothing moved during filling before coming back over the top with the final layers. The tip of one of the arch reinforcement sections is just visible in the centre of the photo. There is another on the other side of the arch. Note the bracing of the side reinforcing. The sticks used to keep it clear of the mould sides were gradually lifted as the mould was filled. The mortar was placed in 25mm layers and tamped down to remove air bubbles. This caused the mortar to behave as a liquid and flow through the perforations in the reinforcing to the sides rather like the liquefaction process in an earthquake.



Filling has now nearly reached the top of the mould. The top sheet of reinforcing has just been placed on the mortar. The side reinforcing bracing blocks and supporting rods were temporarily removed to do this and then replaced as soon as it was in.



The completed pour. It took about an hour to fill the mould. The reinforcing stands proud of the casting for the parapets to give some strength to these



The next day, the formwork was removed except for the main span centring. The ends of the side spans are being temporarily supported with some blocks to avoid stressing the green mortar. It was necessary to remove the side span centring at this point to allow access to carve the stonework under the arches whilst the mortar was still green. There has been some damage to the nearest external corner. However since this was to be carved for a stone finish, it didn't matter.

The main casting took three 25kg bags of sand and one of cement. Thus I estimate the total weight of the viaduct to be about 100kg.

The parapets were cast separately after the main body of the viaduct was cast. The areas of stonework were carved as done on earlier viaducts. The concrete faces of the main span were plastered with a neat cement /water plaster and sanded smooth as was done on the piers for Dubh Eas Viaduct. These processes together with tracklaying will be more fully detailed in the second article.

H & M GR. The End of an Era

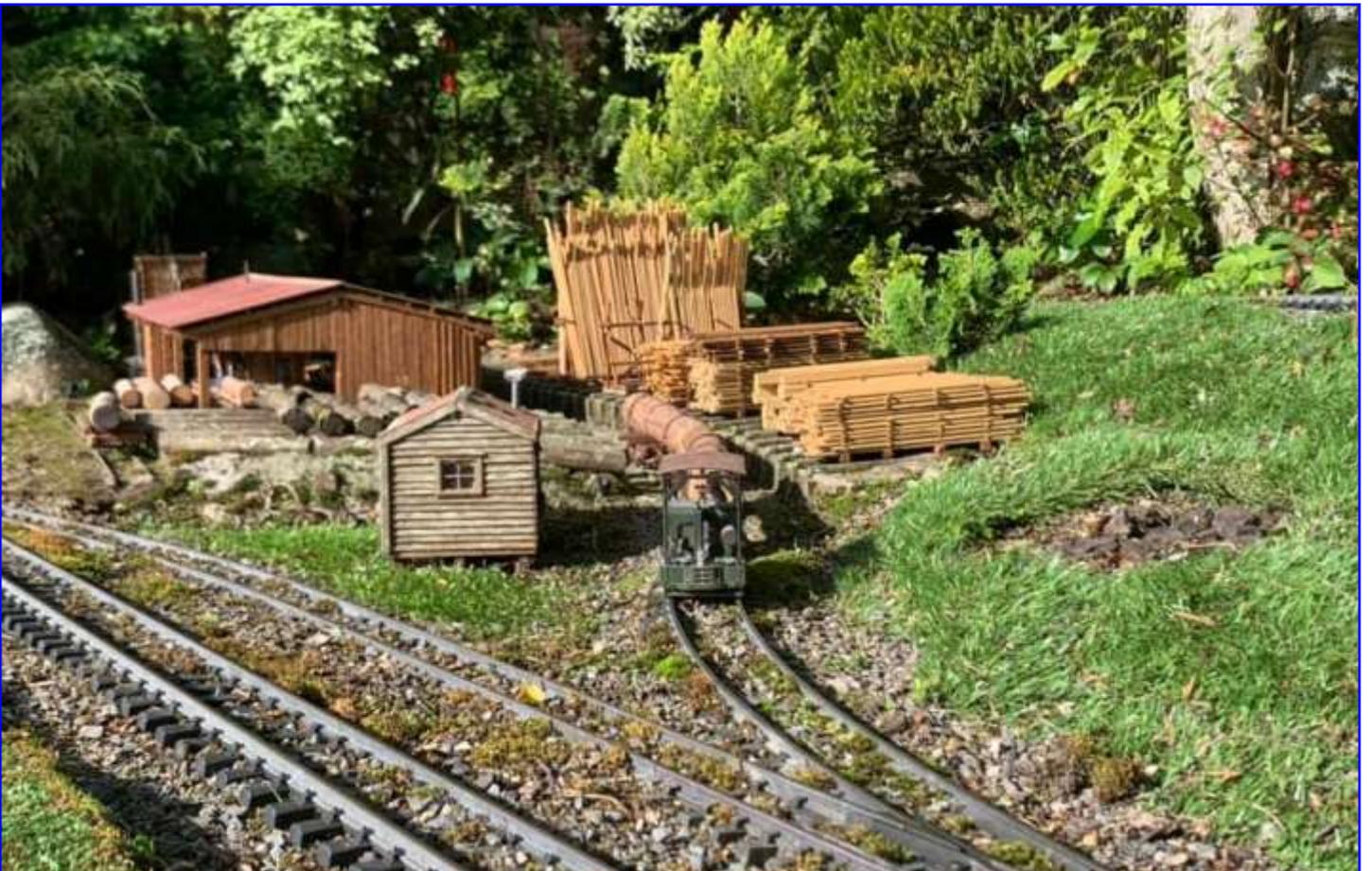
John Robinson, Tawa, (Via NZ Garden Railways)

Well that's it. The last train has run on the H&MGR. Well the Tawa version that is, a new railway, the H&MGR Te Horo Branch, will be built when we have settled in our new home. So to record the railway for posterity here are rather a lot of photos.

Am I sad to end this chapter? Not really, yes I will miss running through a mature garden, but I'm looking forward to creating something new, learning from my existing mistakes and making some new ones



THE GARDEN WHISTLE



THE GARDEN WHISTLE



THE GARDEN WHISTLE



South African 2ft Railways Tanker

Michael Hilliar, Manurewa, Auckland



Mikes SAR 2ft gauge loco water tanker

Photo: Mike Hilliar

A good number of years ago I brought a second hand LGB/Aster Garrett, a locomotive I much admired.

Only problem then, there was no SAR rolling stock available to run behind it; so, the only alternative left was to scratch build.



Now there is a large range of Lasor cut MDF/plywood kits available from David Williams in England <https://www.facebook.com/ResurgamRollingStock/> and I have brought eight of his kits and will be putting a construction report of them in a latter G.W.

John Reinecke produced a rubber mold to resin cast the sides and ends of the SAR high sided D class wagons. So, two of them of were assembled with chassis etc. and alongside them I built this tanker with the intention if I converted the Garrett to radio-controlled battery the batteries could be carried inside the tanker.

SAR carted water in bulk for drinking purposes and also as extra water tenders for the steam locomotives.

Most SAR rolling stock is of a standard size, so a flat car was produced along with the D wagons. I am not a rivet counter but used Peco track pins to represent the larger rivets and embossed the smaller ones on the thinner flat deck styrene with a rivet press.

The main feature of the tank is the welded construction and I gave a great deal of thought on how to model the welded striations; given the smooth surface of a length of 80mm Marley downpipe used. Looking at my reference pictures the weld is rather prominent so how was I going to represent the welds I see in the pictures?

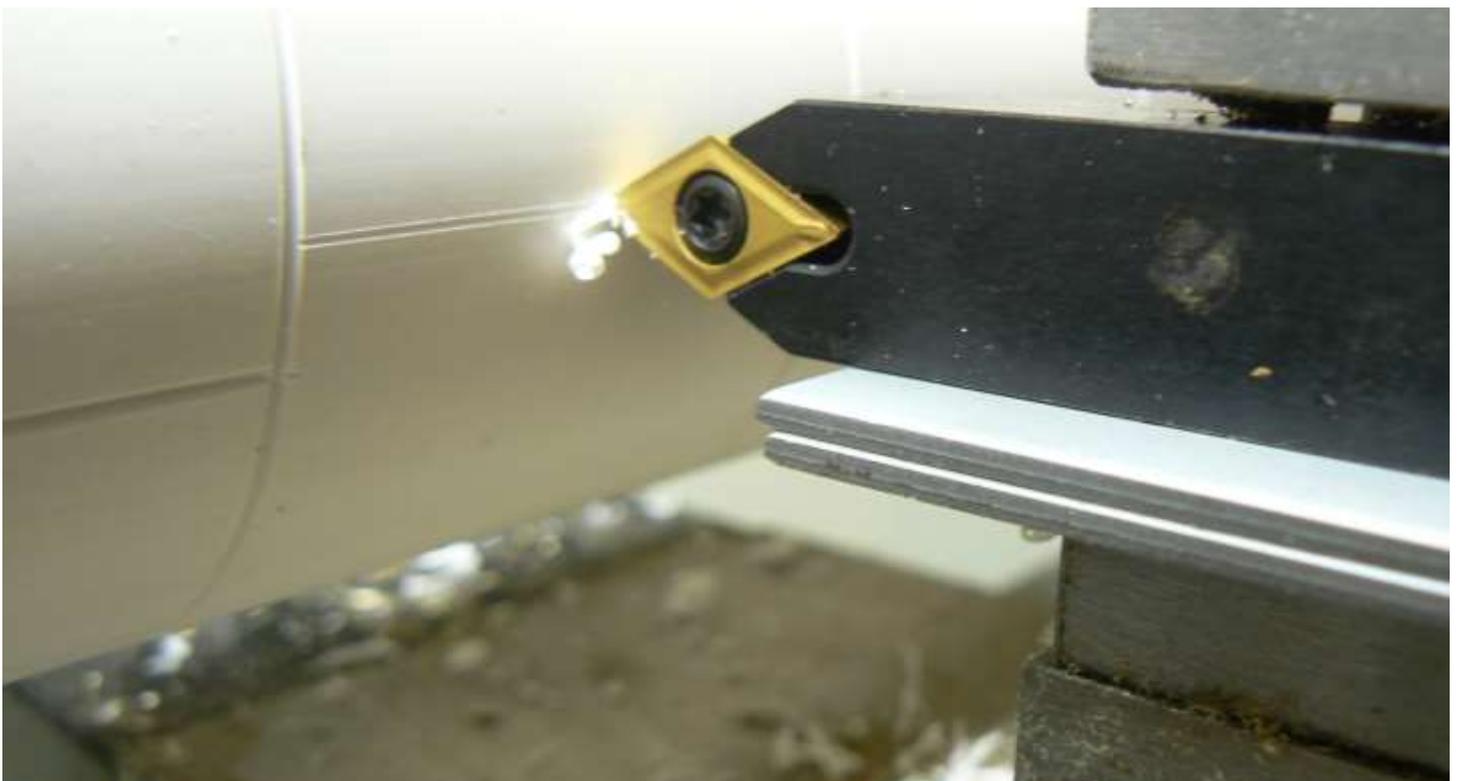
Prototype tankers

Photo: John Reinecke



Cutting the V groove for the welds on the lathe

Photo: Mike Hilliar



Cutting the horizontal V groove on the lathe

Photo: Mike Hilliar

THE GARDEN WHISTLE

Scratching my head, I remembered that a 9mm NZGR modeler Trevor C had wrapped a fine wire around a brass tube to represent spiral welded pipes for a Ub wagon load.

Applying this to my current project my first thought was to scrape off half of 1mm round styrene to a D shape and glue that on. I had concerns about the compatibility of downpipe and the styrene material and how well they would bond. The half round could then be easily detached or knocked off. It would also be difficult to keep their lines straight.

Finally, I hand turned the downpipe in the lathe to form a V groove and set the 1mm styrene rod into that; this gave a large surface to glue and kept it straight. For the cross welds I turned the lathe tool on its side and the lathe carriage moved sideways to make the cuts.

Marley domed end caps with the raised lettering removed were used to form the tank ends.

The tank filler was made up with styrene with a brass hinged lid. My thoughts were if it was converted to battery power, I would put a switch and battery charging jack under the lid.

The ladder is from one of those rip-off

tanks wagons with a new deck and handrail.

The tank supports were cad drawn up by Julius DeWaal and 3D printed by my daughter Katrina. My daughter is also working on the couplings which will be 3D printed; but I am still waiting for those.



Printed tank body supports

Photo: Mike Hilliar



Left: Water filling hatch showing the depth to fit future on/off switch and charging jack Photo: Mike Hilliar

Right: Water filler hatch closed

THE GARDEN WHISTLE



Tanker nearing completion on work bench

Photo: Mike Hilliar



Locomotive water supply valve and rivet detail

Photo: Mike Hilliar

From the Hastings Model Railway Club Newsletter

The Editor's Dribble ...

Pleading the case ... Oh, we can be cunning ... in fact in some cases even devious ... and in some despicable cases even treacherous ... when we have made an expensive purchase in the furthering of our hobby. We then need to smuggle the very attractive item which has just arrived into our own private domain ... our train area ... our hobby room ... an item which we are absolutely positive that we really had to have. There are several protocols and actions we may need to carry out before we unwrap the parcel and allow our latest 'pride and joy' to be on public display. Possibly the most important one is deception of your fellow members of your household. There are a multitude of prepared and well rehearsed statements that we are all fully aware of ... they need to be practised within the quiet confines of your mind so that they become glib, free from nervousness, devoid of that annoying twitch which can occur when everyone knows you have when you are stretching the truth ...

- it's for a friend ...
- I told Bill/Ian/Jim/Rod that I would order it for him ...
- what, this old thing ...
- I've had this for some time ...
- this is the most important aspect I've been waiting for ...
- it was on sale and it will never be available again ...
- have I complained when you bought those new shoes ...
- I told you 12 months ago that I was buying this ... had you forgotten? ...
- It's my passion/money/savings ...
- Didn't you say I could buy myself something for my birthday ...
- It's been on order for over a year ...
- It was a real bargain ... and I couldn't turn it down ...

We have heard these excuses or reasons as anecdotes and we have stored them away in our memory bank for our own use to soften the arrival of the parcel at the door. Our fellow hobbyists readily understand the predicament and dilemma we can face and can smile benignly when we share our purchase or advise them of our latest acquisition. Thank goodness for the Club's "Show and Tell". Perhaps we should have a session of sharing our best excuses for us all to be educated. At the very least we can fall back on the tragic statements of it not being pornographic or destructive in the terrorist fashion ... and a man needs his hobby. One other important detail to be aware of is the hiding of the cost ... sometimes difficult to do if it comes in from overseas ...

The best solution of all is to haunt the front door or letterbox and intercept the purchase before prying eyes or a beady stare can awake a plethora of questions. Questions which could be uncomfortable to answer without breaking up vows, promises and the happy home.

Errol Hantz ... Editor



2021 Garden Railway Convention

6-8 February 2021

Registrations are being received now that the COVID-19 Alert Level is down to 1.

Airlines are now listing greatly reduced flight costs, so now is the time to register for the Convention and make travel bookings.

There will be eleven layouts to visit over the three days. Eight of these are new since the 2015 Christchurch. The other three have been updated. Some are track powered, while others are battery or steam operation only

Prototypes modelled include NZR, European, American in scales from 1:20.3 through to 1:24

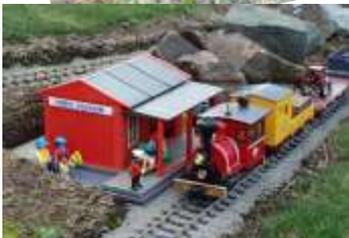
Clinics/Workshops: These will include methods of weathering wood structures, Weathering models, setting up for scratch building

Trade Stand and Buy, Sell & Swap tables will be provided

Register now for the discount Registration



2021 NZ Garden Railway Convention Montage





12th NZ Garden Railway Convention

Christchurch, 6-8 February 2021

COVID-19

The Convention will be conducted under the COVID-19 Level 1 protocols applicable at the time of the Convention. The details given on your Registration Form are suitable for Contact Tracing. The Russely Golf Club has its own Contact Tracing procedures, which the Convention Committee will comply with.

Hand sanitiser will be available at the venue and all layouts. There is currently no requirement that masks be worn, but if you feel the need for a mask we suggest you provide your own quantity for the duration of your stay in Christchurch.

In the event that the COVID-19 Level 2 or above come into force, a full refund of your registration will be made.

Contact: 2021ngrc@culcreuchfold.org.nz or Phone 021 2646 945 for more information

NEXT GENERATION UNIVERSAL SOUND CARDS FOR ONLY \$99

For battery radio control or track power. Easy screwdriver installation. Remote control, available separately, enables adjustments without dismantling the loco.

For Steam ... synchronised, load sensitive chuff, 16 variable plain and chime whistles, bell, safety valve, live steam injector, "All aboard", guard's whistle, brake squeal and Westinghouse brake pump.



For Heavy Diesels ... 6 adjustable, load sensitive engine types, 6 variable horns, bell, brake release, engine start/stop, brake squeal, "All aboard", guard's whistle and switchable turbocharger.

For Light Diesels ... Soundcard with 100% recorded sounds including selectable horns, brakes, two engines, guard, start up and shut down



For Electric Traction for locos and multiple units with 5 horns, 4 motor sounds, 2 compressors, brake release and more.

For Trams and Streetcars ... with 3 bells/gongs, 8 horns/air whistles, buzzer, brake and rail squeal, 3 compressors and two motor sounds.

NEW



NEW

For Railbuses ... 2 adjustable, load sensitive engine types, 5 horns, bell, brake release, engine start/stop, etc.

www.mylocosound.com

Available from

Culcreuch Fold Garden Railway Model Supplies

Phone: 03 551 2142 or 021 2646 945

Stock now on available in New Zealand

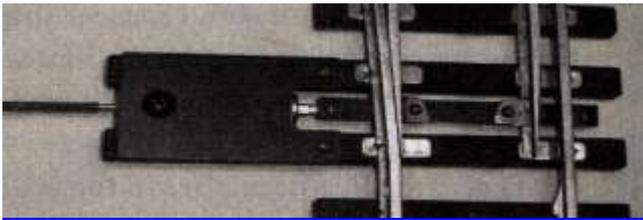
THE GARDEN WHISTLE

Crest Revolution Remote Control System for G Scale Battery Power
 Sold as Transmitter Only, Transmitter and Receiver, Sound Decoder Only, or Transmitter and Power Pack for Track Power

Sounds, and operation controlled by push buttons
 Handheld can hold up to 50 locos
 Can be wired to any G Scale Locomotive, or plug-n-play for Aristo craft Locomotives

NZ Distributor-
 Contact: Phone: (04) 2338555
 Email: sales@mackstrack.co.nz





Sunset Valley Railroad

Thinking of going pneumatic for your switch (turnout) operation? Our comprehensive system is simple to install and use, and it has proven to be very reliable in service with all metal components, not plastic. Compatible with the old Del-Air and E-Z Aire systems. Nearly every product made in the USA

www.sunsetvalleyrailroad.com
 pete@sunsetvalleyrailroad.com
 +1 253 862 6748

New Zealand distributor
 Culcreuch Fold Garden Railway Model Supplies
 cfgrms@culcreuchfold.org.nz
 Phone: 03 551 2142

COMING EVENTS	
February 6-8 2021	12 th NZ Garden Railway Convention, Christchurch
May 8-9 2021	Dunedin Model Train Show, Mosgiel
May 30- June 5 2021	36 th Garden Railway Convention, Nashville, TN, USA
2022	37 th Garden Railway Convention, Denver, CO, USA
2023	38 ^h Garden Railway Convention, Santa Clara CA, USA

RLD HOBBIES



The finest G-scale trains and train accessories

rldhobbies.com

FULL LINE DEALER OF ALL BRANDS LISTED



reindeerpas.com

CEDARLEAF CUSTOM DECALS

Custom decals and logos for your railroad!

www.cedarleafcustomdecals.com

scedarleaf@aol.com • (928) 778-3732 or (520) 831-3390

Club Events and Contacts

Auckland

December 2020: TBA

Club Contact: Auckland Garden Railway Society Inc Email: gardenrailauckland@gmail.com
Philip Sharp, Ph: 09 600 2157

Waikato:

Running Days/Meetings cancelled until further notice

Club Contact: GROW: Garden Railway Operators of Waikato. Email: sandnlipsey@gmail.com
Stefan Lipsey, P O Box 612, Waikato Mail Centre, Hamilton, 3240, Ph: 07 859 3650

Wairarapa:

Sunday 20 December 2020: Lee & Christine Collett, 24 Rhodes Street, Carterton, from 1:00pm

Club Contact: Wairarapa Garden Railway Group. Email: Lloyd.dickens@wise.net.nz
C/- Lloyd Dickens, 55 Titoki Street, Masterton. Ph 06 370 3790.

Wellington:

Saturday 5 December 2020: Brent Thompson's Christmas Gathering. 11:30am start, lunch provided. Live steam, Battery and Track Power

Club Contact: Wellington Garden Railway Group. Email: bilthompson@xtra.co.nz
Coordinator: Brent Thompson, 6 Bodmin Terrace, Camborne, Ph 022 619 4006

Christchurch:

Saturday December 12 2020: Ian & Ann Galbraith, 3 Church Street, Rangiora. From 1:00pm

Club Contact: Christchurch Garden Railway Group: Email: Secy@culcreuchfold.org.nz
Secretary: Ian C Galbraith, 3 Church Street, RANGIORA 7400 Ph 03 5512142
President: Andrew Wilson, 021 273 3047

The *Garden Whistle* is published monthly by the Christchurch Garden Railway Group and features news from various G scale Groups in New Zealand.

Each club is a separate identity and the contact details may be found above.

Contributions of articles and/or photos are always welcome. Photos should be sent as separate jpg attachments.

The views expressed in this newsletter are not necessarily those of the Editor, Executive, or members of the Christchurch Garden Railway Group

Editor: Ian C Galbraith, 3 Church Street, RANGIORA 7400.
Email: GW@culcreuchfold.org.nz