



# A new look for the tunnel

NO self-respecting railway should ever be built without having at least one tunnel. So thought the developers of the WAGR when they built Swan View Tunnel in 1895, and so did the builders of our own NDMES railway in 1985.

The original construction of our tunnel was certainly one of the biggest projects ever undertaken by the club. It is a central theme and probably one of the most loved features. The tunnel in the early days boasted artificial stone portals made of coated polystyrene, which gave an authentic look to the tunnel approaches.

Unfortunately, local children found that it was quite entertaining to “pop” out bits of the portal with their fingers and proceeded to destroy the portals and the weather completed the job for them. Eventually the polystyrene was removed altogether, the tunnel remaining in a forlorn rectangular state for many years.

Attempts have been made over the years to rebuild the portals, however the project has never got off the ground. About 6 years ago, John Martin and I put some thought into building the portals with Hebel (lightweight concrete) blocks but we failed to get the project under way.

Fortuitously, Joel Bacich visited our club on one of Peter and Sue Smith’s family days and happened to be telling Steve Reeves that he is a stone mason, voicing an interest in rebuilding the portals. This happened to be right at the start of the Covid-19 lockdown and so Steve put forward a proposal to the club committee for stone arch portals based on the Swan View tunnel portals. The committee decided to purchase the limestone blocks required and at the first opportunity, when we had a quorum present, it was decided by the membership to allow Joel to build the portals rather than to attempt the difficult project ourselves.



Above: The new southern tunnel portal as it stood in mid- August, nearing completion. *Photo: Charles Coppack*



Above: Wooden formwork for the arch.

Right: Commemorative date stone.

*Photos: Geoff Wilkinson*



After running a few freight train loads of limestone blocks up to the tunnel, Joel started splitting these into smaller “scale” blocks, whilst we built the elliptical arch formwork. Joel has been working only on Saturdays and it has been quite a long project. The southern portal was the first end to be built, the theory being that we could iron out any problems on the less visible end. This portal is now almost complete, and it was decided to place the date of the formation of the club - 1985 - on the date stone above the portal keystone.

Joel has done an excellent job in the creation of stonework that already looks aged and we now have the task of making all the surrounding gardens and fencing look just as good!

*Geoff Wilkinson*

Left: The Swan View tunnel, built 1895



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## President's Report for August 2020

MANY of our members may have realised that the decision making process within our club is fluid and that we try to react to members' suggestions and opinions! I am talking more specifically here about our workshop facility.

After receiving the comments from the Compliance Committee on accessing the kitchen via the workshop, it was suggested that a separate access to the kitchen could be made. This, in turn, meant that the workshop would gain additional workable area as a consequence, which means there is then no requirement for a new workshop building at this stage.

The solution of a safety problem will therefore have led to an overall improvement of our facilities. There is still some planning work to finalise and we are seeking some funding assistance in this regard. In the meantime, work has progressed on boxing out the stairs. Amongst other benefits of this is the clearer separation of workshop activity from upstairs activity.

The electrical work that was to be done in the workshop has been deferred until the re-organisation of the workshop is complete.

Tuesday mornings have recovered well from the shut down and Saturday mornings are seeing a few regular members. Joel the stonemason has been working most Saturday mornings and work on the portals, whilst progressing quite slowly, is moving forward well (*see story and photos on page 1*). Once the tunnel portals are complete we intend to start a couple more new projects to tidy up other aspects of the tunnel approaches, including safety fencing and the gardens.

It would be nice to see a bit more Saturday morning



**President's Report  
By Geoff Wilkinson**

activity with a few engines running as people begin to realise that it is a regular club day.

The work on the "Members Only" area on the NDMES website is progressing and should be operational within a couple of weeks. As with everything else that happens in this club, the work is performed on a volunteer basis and whilst there may be some frustrations with the time taken for things to happen, someone is always working hard in the background to balance life and club demands.

Once the "Members Only" page has been set up, we will continue developing the "Come and Try" initiative.

A well-attended meeting was held on Sunday, July 26, and one of the points raised at that meeting was the matter of the club's minimum operating expenses. We have issued an email demonstrating that we need to make about \$3,000 per annum in addition to our membership fees, so we do need to work towards making public running a reality once again, even if it is only on a limited basis. Please take the time to complete the on-line COVID Hygiene Course so that we are well prepared for a future opening to the public.

Tom Winterbourn has been actively planning and organising the Reunion Run for 30 August 2020 (*see item below*). This event, whilst not a public event, is a necessary step to re-opening for the public and will show our appreciation for the efforts of past members and older current members who have difficulty attending regular club days.

Please show your support for this event by taking part in any way you can and we all look forward to getting together then!

**Geoff Wilkinson**

## Club reunion run and 35<sup>th</sup> anniversary celebration

This function is intended to kick-start our non-public activities following the easing of COVID-19 restrictions in WA and also to invite back to the club present and former members we have not seen for a while but who have made a significant contribution to the club over its 35 years. Official invitations have already been sent out to our special invitees.

We have three members so far who have registered and successfully completed the AHA Government approved COVID hygiene course and they will ensure all necessary precautions are taken to safeguard you and our other guests on the day.

We hope to have as many members as possible present to help display and promote our activities and development over recent years. To this end, those of you who have stationary steam engines, traction engines,

locomotives or other models are asked to bring them along and display or operate them. A display area will be set up for this.

Similarly, we plan to have train rides available on both the GLT and raised tracks and also to showcase our garden railway activities.

A BBQ lunch with salads and sandwiches is being arranged, with food to be available around midday. Tea and coffee will be available throughout the day.

To make this event a success, we need your help. If you haven't got a loco, a model engineering item or Gauge 1 rolling stock to display or operate, please offer your services to help run the event and to ensure we are COVID-19 compliant.

Hope to see you then and there. Gates will be open about 8am on Sunday.

**Tom Winterbourn**

## Sandgropers 2020

IT looks like Sandgropers 2020 will go ahead at Forrest Park in Bunbury in November this year, provided that there is no adverse change to the current COVID-19 situation in WA before then.

Meals will not be supplied by the host club this year, but please bring along your own food. BBQs will be available, or you can visit one of many fast food outlets or restaurants nearby. Complimentary morning tea and afternoon teas will be provided.

There will also be a raffle with some great prizes. This will be drawn on the Saturday night.

Camping overnight will be available for anyone wishing to stay on site and continue the get together on Sunday. Accommodation should be available in local motels and caravan parks for those who prefer, but do check bookings early, as holiday accommodation around WA is in high demand.

Traditionally, this has been a great weekend of relaxed steaming and fellowship, so dust off your locos and traction engines and let's make this a good one too.

Please RSVP by Friday, October 30, for catering purposes. Contacts: Leeanne Gardiner 0402 090 397 or Jeff Clifton 0407 383 864 or 9725 1994.

## 2021 AALS Convention

WITH the cancellation of this year's AALS convention at Tullamarine because of the Coronavirus, it is now hoped next year's event will go ahead, as planned, in Adelaide.

One of the biggest contingents of NDMES members for some time had planned to attend the Tullamarine convention and they were naturally disappointed with the late cancellation.

The 2021 event is scheduled to be hosted by the Penfield Model Engineers Society in Edinburgh from Thursday, April 1, to Monday, April 5. It is the closest interstate venue to Perth, so hopefully more members may be tempted to hit the Nullarbor with trailers and locos!

The following two conventions have also been confirmed: Wagga Wagga Society of Model Engineers will host the 2022 event from Thursday, April 14, to Monday, April 18, then it's back to Tullamarine Live Steam Society at Bulla in Victoria for the 2023 convention, from April 6 to April 10.

More details on the 2021 convention, if it goes ahead in these uncertain times, will be provided when they come to hand.

*Tom Winterbourn*

## Calendar of Events for 2020

**Club run day and reunion (members only)** Sunday, August 30 8:00am onwards (*see page 2 for details*)  
**Sandgropers 2020** Sat-Sun 7-8 November **Event at Forrest Park, Bunbury** (*see above for details*)  
**Other member's days and activities are now happening** — details will be updated by email or contact Geoff Wilkinson (see below).

## Know your Society

<b>President</b>	Geoff Wilkinson	0424 080 979	<a href="mailto:president@ndmes.org.au">president@ndmes.org.au</a>
<b>Vice President</b>	Phill Gibbons	9390 4390	
<b>Secretary</b>	David Naeser (acting)	0433 088 703	<a href="mailto:secretary@ndmes.org.au">secretary@ndmes.org.au</a>
<b>Treasurer</b>	Suzanne Smith	0410 492 083	<a href="mailto:treasurer@ndmes.org.au">treasurer@ndmes.org.au</a>
<b>Committee Members</b>	Garth Caesar	0418 950 755	
	Ron Casotti	0407 464 747	
	Charles Coppack	0409 044 969	
	Peter Smith	0407 472 770	
<b>Boiler Inspectors</b>	Ron Collins	0427 461 279	
	Phill Gibbons	9390 4390	
	Steve Reeves	0408 955 692	
	Noel Outram	9525 1234	
<b>Librarian</b>	John Martin	0406 509 400	
<b>Birthday Bookings, Run Days</b>	Paul Costall	0407 010 252	<a href="mailto:costall.paul@gmail.com">costall.paul@gmail.com</a>
<b>Driver Training</b>	Phill Gibbons	9390 4390	
<b>Safety Compliance Officer</b>	David Naeser	9276 8709	
<b>Newsletter Editor</b>	Jim Clark	0407 988 746	<a href="mailto:jimclark@hardwareandsoftware.com.au">jimclark@hardwareandsoftware.com.au</a>
<b>Website</b>			<a href="http://www.ndmes.org.au">www.ndmes.org.au</a>

**Society Grounds and Track Site** Vasto Place (off Balcatta Road), Balcatta  
**Postal Address** NDMES, PO Box 681, Balcatta 6914, Western Australia

## The trouble with axle pumps

*With Phill Gibbons on holiday at the moment, Editor Jim Clark continues the Engineering Matters series.*

I had my Allchin traction engine out for a run recently. I was steaming vigorously uphill and all was going pretty well until there was a sudden loud bang and the engine literally stopped dead in its tracks.

After a moment to recover my somewhat frazzled wits, it immediately became apparent what had happened — the axle driven water pump piston had come out and wrapped itself round the crankshaft, as you can see in the photo at top right.

What caused it to fail so spectacularly? Possibly a hydraulic lock, as I had the bypass valve almost closed and perhaps the delivery clack stuck or it couldn't pass sufficient water flow. It's also possible that the actuator linkage had bent a bit during previous vigorous runs and this was just the final straw — this time it bent a little more, enough for the piston to come out of the end of the pump gland, and half a revolution later it was all over.

Talking to others, it seems that axle water pumps are notoriously unreliable and I have since heard several tales of similar failures, often involving breakage of the actuator link, on both traction engines and locomotives.

I decided to have a close look at the whole design and try to bullet proof it as far as possible to prevent it from ever failing again. On this occasion I was lucky in that only superficial damage was done to the boiler cladding and paintwork. Another time a failure like this could do a lot more serious damage to the rest of the engine.

The first problem with axle driven water pumps is pretty obvious and is common to many designs — the centreline of the pump is offset below the centre of the crank axle and is behind another shaft, necessitating a dog-leg actuator link to drive it. Mine is made worse by the fact that the driving eccentric is also offset to one side of the pump in plan view, requiring a dog-leg in both vertical and horizontal directions. Part of the driving force from the eccentric then becomes a bending moment on the actuator linkage around the dog-leg bends, attempting to fold it up completely, as shown...

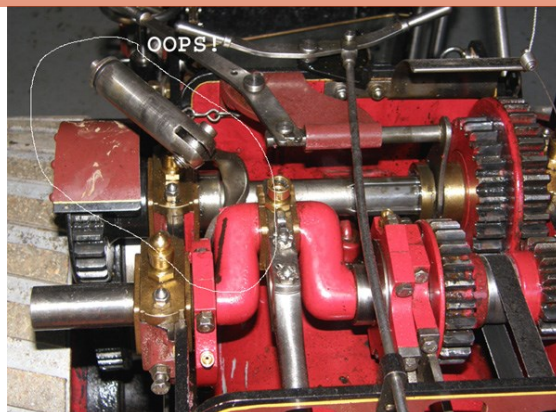
This is usually overcome by making the linkage out of material thick enough to resist the bending forces, but clearly 4mm thick stainless steel wasn't good enough here.



The second problem is that most axle pumps appear to be grossly oversized for the amount of water they actually need to deliver. This is a problem I've come across on loco axle pump designs as well. That leads to



**Engineering Matters  
with Editor Jim Clark**



very high back pressures as the pump tries to get rid of the water through what are usually significantly under-sized pipes, delivery clacks and bypass valves. As the engine speed increases, so does the pump back pressure on each revolution, resulting in a hammer-blow loading.

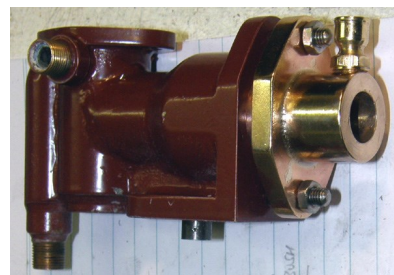
The third problem, to be covered in more detail later, is that if it all goes horribly wrong there is nowhere for the excess water pressure to go — water being incompressible, an almost irresistible force will meet a mostly immovable object and something just has to give.

Tackling the first problem first, the obvious answer is to beef up the linkage so that the worst-case forces that it encounters are unlikely to bend it. I did this by making a new linkage out of 5mm stainless steel, as wide as I could fit into the spaces available, with a gusset silver brazed into the horizontal dog-leg (*see following photo*).



I also extended the gland on the front of the pump to provide more bearing surface

for the side-load imposed by the offset arrangement, and to ensure that it was impossible for the piston to come back far enough for its end to pop out of the gland (*photo at right*).



The second problem, over-sizing, seemed probable as the piston was originally  $\frac{3}{4}$ " dia. with a 22mm stroke, which looks pretty big for this relatively small engine.

Back to basics, which have been covered in various model engineering articles and books, but let's get a rough estimate of the actual amount of water needed per revolution for the boiler to keep up with the engine at full output power. We will use cubic centimetres (cc) in the following discussion for familiarity and simplicity.

*(Continued on page 5)*

## The trouble with axle pumps (cont...)

(Continued from page 4)

The 3" scale Allchin has a single cylinder of 50mm dia. with a 75mm stroke. The swept volume is 147cc but as it's a double-acting cylinder, the actual total steam volume required per revolution is twice this at 295cc.

Assume that the steam is delivered with no other losses at 100psi with 100% admission and no expansion, and that 295cc of steam uses about 1.35cc of water from the boiler on each revolution (water expands about 220 times its volume when it turns into steam at 100psi).

So, to keep up with worst-case usage, the pump needs to deliver at least 1.35cc per revolution. The pump must not only keep up, but must also be able to raise the water level in the boiler while running, so allow for the pump to deliver perhaps twice the upkeep amount, say 2.7cc.

The original pump displaced about 6.25cc, more than four times what is necessary to keep up with maximum consumption. Remember this is worst-case, as the valve gear provides some expansion with admission limited to about 85% or less, and at lower boiler pressures water expands far more as it turns into steam (380 times its volume at 50psi for example), so the actual water usage will be considerably less than the worst-case estimate.

Reducing the piston diameter from  $\frac{3}{4}$ " to  $\frac{1}{2}$ " would give a displacement of about 2.8cc, much closer to what is really needed. I made a new  $\frac{1}{2}$ " dia. piston, and as part of the work in extending the gland on the front of the pump I pressed a bronze reducing sleeve into the pump body to bring the cylinder size down to  $\frac{1}{2}$ " to match. I used an imperial size for the pump piston to maintain compatibility with the BS series of O rings.

To address the third problem, "when all else fails...", I fitted a pressure relief valve to the outlet side of the pump, seen in the photo of the re-assembled pump (*right*) as the knurled knob on top of the pump body.

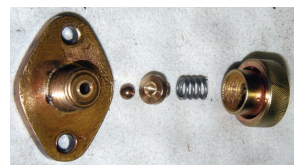
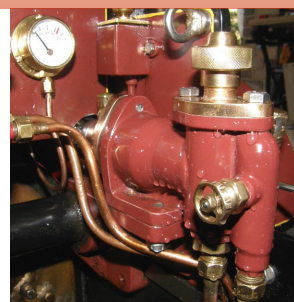
This is just a simple ball held down onto a small hole in the top flange by a strong spring (*components shown at right*).

As I didn't have any data on the spring it seemed easier to simply try it out and adjust the screw-down on the spring until the relief valve doesn't spit under normal use. Of course, it is necessary to ensure that the screw can't completely compress the spring when the knob is fully wound down, or that would defeat the fail-safe purpose of the relief valve.

On testing, there is a much less noticeable load on the engine when the bypass valve is closed and the engine operation is smoother and quieter. Whether the smaller diameter pump will keep up with the boiler demands under all running conditions is yet to be determined, but no doubt a few more strenuous runs will show up any delivery shortfall if there is one, which I doubt.

So, lessons were learned and improvements made all round! Hopefully this article will be helpful to you if you are having problems with an axle pump, and may give you some food for thought if you are currently building an engine.

*Article and photos by Jim Clark*



## North Ings Farm: A model engineer's Utopia

FOR anyone that is interested, my old mate in the UK has a small 2ft gauge railway and museum called "North Ings Farm Museum and Railway". There are heaps of photos and videos on Google, YouTube and Facebook.



I include these latest photos especially for the Boiler Group of his "Merryweather Type B vertical boiler". Of interest is the rotative feed pump hanging off the back. It looks much too big for the boiler size, and is actually used to pump large volumes of water for a fire hose.

He has a steam tram called "Swift" powered by a similar boiler and an ex-ship windlass steam engine, which I drove many years ago.

*Article by Richard Turner*

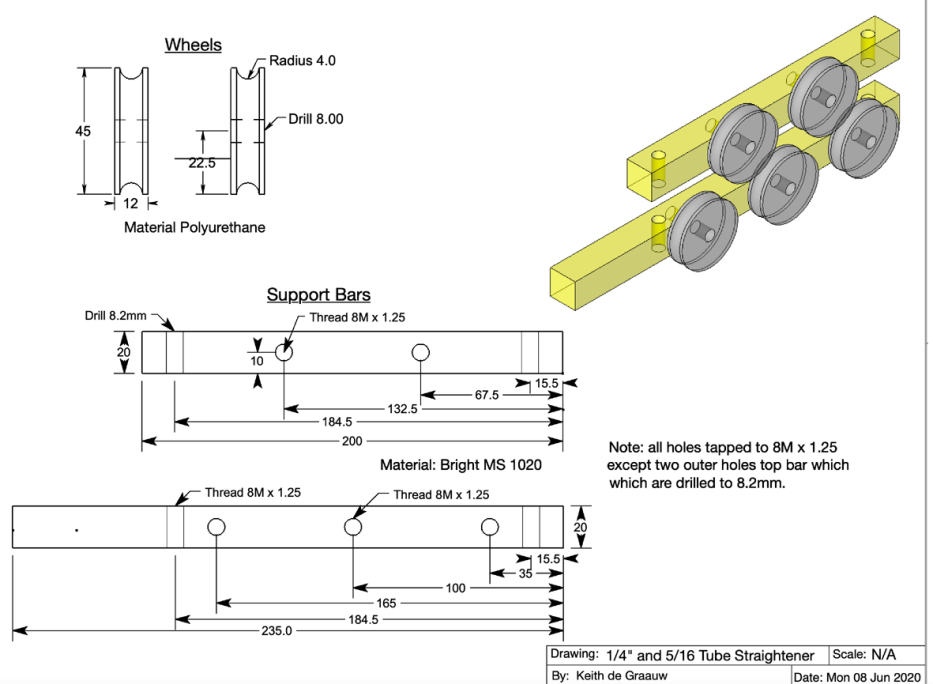


Above: The steam pump in action.  
Left: The Merryweather Type B boiler from the front.

## A simple tube straightener

RECENTLY I purchased some  $\frac{5}{16}$ " copper tube and I needed to straighten it. I looked on the Internet for options to straighten the tube and saw several commercial and some DIY units. The one I have made is a modification from a DIY unit I saw. It will straighten both  $\frac{5}{16}$ " and  $\frac{1}{4}$ " copper tube.

It works like a treat (although I have only tested on  $\frac{5}{16}$ " to date). You can hold the unit in your hand, or in a vice — the reason the lower bar has one end a bit longer.



The drawing and photos should provide the required clues to make this unit. Materials required are:

- 20 x 20mm square bar, 435mm long (e.g. BMS 1020)
- Polyurethane round bar 50mm dia. about 120mm long (you could also use high-density polyethylene HDPE)
- 5ea 8mm socket / hex head bolts 40mm long
- 7ea 8mm washers
- 2ea M8 x 1.25mm threaded rod about 90mm long (or bolts 75mm long — the following nuts are not needed if you use bolts instead of threaded rod)
- 2ea M8 x 1.25 normal nuts
- 2ea M8 x 1.25 lock nuts
- 2ea springs, internal diameter 8.5mm length 35mm.

**WHEELS:** I ground the end of a piece of 10 x 10mm HSS to an 8mm diameter semi-circle to form the grooves in the wheels (photo at left). The wheels are a simple turning job and have an 8mm hole drilled in their centre.

**BARS:** All holes in the bars will be threaded to M8 x 1.25, so use a 6.8mm drill, with the exception of the two end holes on the top (short) bar (the one with three wheels) which will be drilled to 8.2mm.

**ASSEMBLY:** I placed washers between the head of the bolt and wheels. Next I Loctited the bolts in place. I tightened the bolts till the wheels very slightly rubbed against the bar. I used Loctite on the two threaded rods and placed nuts on the bottom of them once the thread passed through the bottom (long) bar, thus acting as lock nuts, preventing the threaded rod from undoing.

Finally, I placed the springs between the two bars and

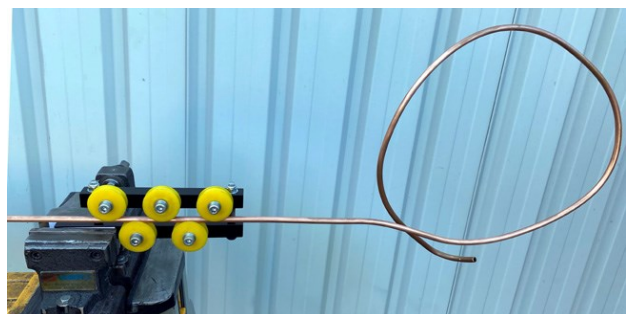
then fitted washers and lock nuts after the top (short) bar was fitted over the threaded rods, resting on the springs.



**USAGE:** I screwed down on the two locknuts until the  $\frac{5}{16}$ " copper tube easily pushed through the wheels. I then slowly screwed down on the locknuts till there was some friction when turning the outer two wheels on the top (short) bar. While doing this I also used a ruler to measure between the ends of the bars to ensure they were being bolted down parallel.

I then rotated the copper tube while pushing it forwards and backwards through the rollers.

*Article and photos by Keith de Graauw*



## A day out on the Flying Scotsman

It was early February and we saw the TV news about Flying Scotsman completing her refurbishment and coming out of the Bury works. My wife Fiona's immediate comment was: "I know what to get for a joint anniversary present." She set to on the web searching for a tour and although our anniversary was in May, the earliest we could get a trip was Sunday, August 21.

The original trip was to start in York, stop at Leeds, Keighley and Skipton and then on to Carlisle across the Settle to Carlisle route, tracing the route known as the Waverley from her earlier years.

The floods and resulting damage to the line near Appleby in Cumbria put paid to that, so the alternative route was to start at Leeds, pick up Flying Scotsman herself at York, travel up the East Coast line until just past the Metro Centre south of Newcastle, where we veered off to the west through Hexham and then on to Carlisle, returning via the same route later on.

We arrived at Leeds station in good time to board the train and as it was a celebration of our anniversary, albeit four months late, we elected to push the boat out and go for the Platinum package.

Settling into our very plush first class seats, we departed for York hauled by a Class 57 diesel. The train was relatively empty for this leg, but as we approached York we could see the platform was packed with our travelling companions plus a horde of other enthusiasts keen to have a look at the famous locomotive.

Disembarking, we made our way to the front of the train and witnessed the Class 57 being uncoupled and zooming off to a siding somewhere. It seemed to be ages before Flying Scotsman hove into view from her home at the National Railway Museum. Obviously the regular train services took priority, even though they were late.

The excitement when she did appear was very apparent, with everybody trying to get a good view of her as she backed up to the train. There was plenty of time to take photos and I was able to get close up and view the cab. Very impressive! The paintwork was in pristine condition and in the BR green livery.

Settling in to our seats again, the steward brought round the drinks and meal menu and gave us a complimentary Bucks Fizz. A lovely lunch of grilled salmon fillet in a dill and Hollandaise sauce with vegetables followed, accompanied by the mandatory bottle of wine, but only to be sociable, of course!

We picked up speed and the steward had a device that could tell us the speed and we reached marginally over 70mph (112kph). She is limited to 75mph anyway, although in her heyday she did 100mph.

We had to stop for water from a road water tanker seemingly in the middle of nowhere.



Arriving in Carlisle we all got off to see the loco uncouple and trundle off round the Carlisle triangle to turn round. In the meantime, we had a saunter round Carlisle — a bit miserable late on a Sunday afternoon with all the shops shut. No option but to find a watering hole to pass the time... Well, somebody has to do it!

We got back to the station in good time to see Flying Scotsman return and by now there were a lot fewer people so it was easier to get a good look round and take more photos and videos.

Soon it was time for the off, with the drinks we had ordered before arriving at Carlisle all ready at the table so we had no option but to partake of the amber nectar. We were then subjected to a fabulous four-course meal with roast sirloin of beef with all the trimmings taking pride of place. It was a truly wonderful silver service meal.

We had one short unscheduled stop near Blaydon because of trespassers who were on railway and potentially in danger and then another stop to take on water. By now it was getting dark and as we were in the second carriage from the front we could see the glow from the firebox on the side of the track. Three-and-three-quarter hours after leaving Carlisle we pulled into York, where the majority of the passengers disembarked.

Once again we had a close up of Flying Scotsman uncoupling and leaving us and the Class 57 joining us for the last half hour leg back to Leeds.

It was one of the most enjoyable days we have had for a very long time and we will have many memories to cherish for many years to come.

*Article and photos by Dave Barlow*

## Notes from the Boiler Group

BOILER Group days are back and quite a bit has been happening of late. New member Peter McMurray has started on a boiler for a 5" gauge Flying Scotsman and Peter Smith is looking at a boiler for his latest project, a steam wagon. Dave Barlow continues with his WD Austerity 2-8-0 loco (see July-August issue).

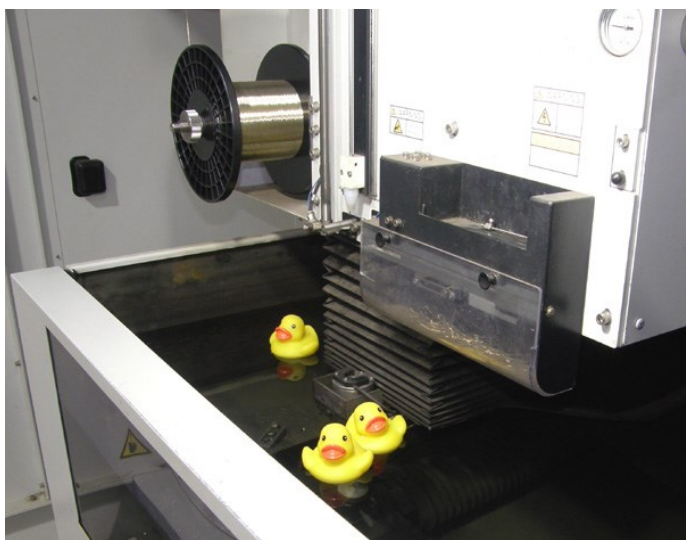


There is always a miscellany of interesting bits and pieces either being worked on or on the table for discussion each week — not least of which is this heavy-duty “super linisher” being built by Ron Collins (*photo at left*).

Want some inspiration for your next project, or a bit of advice on your current one? This is the place to get it!



Stan Armstrong (left) brought along a cake and candle to celebrate 33 years of his retirement — good on you Stan! (Ron providing some heavy-duty assistance for lighting the candle...)



Last but not least... Don't leave your machinery unattended too long in the Hills, or a family of ducks might move in! *Courtesy Lindsay Lockhart*



Above: A suitably forlorn looking Lindsay Lockhart next to his Wallis & Stevens traction engine — the words on the placard say it all!

Below: The cause of Lindsay's troubles — a circulating tube in the firebox of his Briggs boiler that had blocked up, corroded through and cracked. New pipes fixed the problem. *Photos: Jim Clark*



A point worth noting for those who run Briggs boilers in either traction engines or locos — blowing down the boiler doesn't necessarily blow down the circulating tubes, depending on the plumbing arrangements.

Checking that the circulating tubes are clear of scale, especially before storage at the end of the season might save you similar future embarrassment! *Jim Clark*

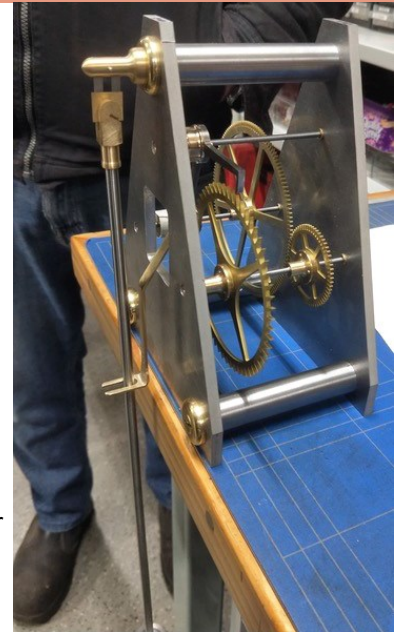
## A Model Engineer's clock

REGULAR visitors to the Boiler Group will have noticed the beginnings of a large skeleton clock slowly developing, alongside the many other projects currently on the go.

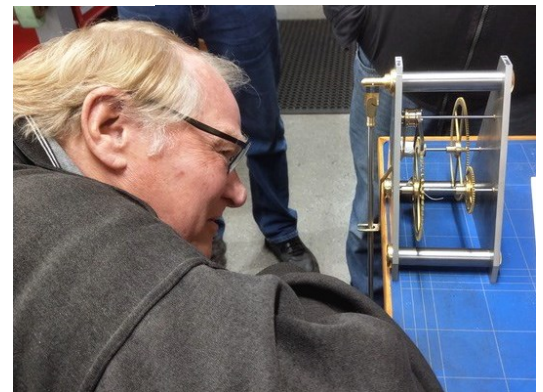
Clocks and clock-making are one of the side interests of quite a few model engineers. The arrival in the club of our horological expert Garth Caesar has provided the impetus for a few people to think about putting that interest into practice, so Ron Collins and Jim Clark have started building a pair of skeleton clocks.

Based on a design by well-known UK clockmaker John Wilding, these are scaled-up versions, which not surprisingly have been adapted to suit our model engineering tastes. Firstly, they will use a more challenging “dead-beat” type escapement instead of the traditional “recoil” type. (According to the books, a dead-beat escapement is not recommended for a first clock, so we just had to do that!)

Right: Progress to date — the test rig for proving that the escapement design works and verifying the wheel/pinion engagement depth.



Below: Garth Caesar inspects the beat of the escapement — we got a “pass”!



The clocks will utilise the technology we have available and should provide some very interesting challenges, which will feature in future issues.

So far, we have made up a test rig to get the design of the escapement correct — and it took six slightly different versions of the pallets to get it working properly, so definitely a challenge there!

*Jim Clark*

Left: Happy with the escapement, Jim Clark (left) and Ron Collins discuss their next move over morning tea.

*Photos: Bill Walker*



## Food for thought...



“The Model Engineer’s curse”  
Courtesy Dave Barlow

## What is it?

THIS was something completely different that featured in the last issue. Yes, it's a railway lamp. But what sort?

It's a large McGrath guard's lamp. They hung in Victorian Railways guards vans up to the 1980s. It was kerosene fired and was used by the guard to read his paper.

The Victorian Museum has one in its collection and their website states: “*This style of lamp was originally invented by McGrath, a guard employed on the Victorian Railways in the late 19th century and was subsequently adopted as the standard pattern of lamp issued by the Victorian Railways to all guards up until the period when electric lighting was introduced in all guards' vans.*”

Any idea where I could buy a small one? I've never seen one for sale!

*Charles Coppack*



## 2-stroke mower to 4-cylinder King

*FOLLOWING on from the article on Dave Barlow in the last two editions of Steam Lines, we thought we would follow up on the “new boy” theme and throw the spotlight on another new member, but this time from the garden railway section of our society.*

*The focus this time is on Clayton Austin, son of established member Lyall Austin. Clayton comes to us with a sizeable stable of impressive Gauge 1 locos, including a four-cylinder GWR ‘King’.*

*The garden railway fraternity is growing in strength and there is serious talk of expanding the current three-circuit layout. Clayton’s arrival will only add strength to this enthusiasm, particularly given his surveying qualifications. Here, then, is Clayton’s story:*

BY his own admission, as a model engineer Clayton Austin has very little experience to offer, but his route to becoming an NDMES member is certainly worth telling.

Once heard describing himself as “an improved version of the old man”, Clayton admits he has probably inherited some genetic trait from his dad as far as model engineering is concerned, along with the fact that Lyall had many mechanical projects on the go as he was growing up. So dad’s shed was always full of tools for him to get his hands on.

“I was mowing lawns from a very young age of around five and I felt like “The Man” in charge of that little 2hp Briggs and Stratton beast!” he recalled. “The rest of the time I was probably pestering dad with questions, for which he always had an informative answer.”

Clayton said it was around this time that he got a Hornby Flying Scotsman train set for his birthday.

This would have been influenced by his grandfather’s history as a career-long WAGR steam loco driver, operating throughout the South-West of WA. Grandfather Les Austin is featured tending to a V-Class No. 1206 on Page 7 and 8 “In Praise of Trains in Australia”, by Gary McDonald (1978).

“Unfortunately, Grandad died when I was only 12,” he said. “He had four young grandsons and it was a huge loss for our family to lose him so early.

“However, my dad Lyall continued the passing on of knowledge and showed great patience and restraint while I scattered his tools all over the back yard!”

At age 13, Clayton started working at the local chainsaw and lawnmower centre as a Saturday cleaner and within a few weeks, his interests had been noticed and his boss kindly allowed him to start building kits up for the showroom.

“Within a few months I was servicing and rebuilding small 2-stroke and 4-stroke engines, honing cylinders, grinding valves and filling in on extra shifts when the main staff went on leave,” he recalled.



Clayton Austin with his Gauge 1 Southern Railways heavy Mikado loco 4501 on the garden railway, at the February 2020 club run day.

This is one of several locos (including a 4-cylinder ‘King’) which he has acquired since being bitten by “the steam bug”. *Photo: Jim Clark*

“At school, I won awards for all my woodwork and metalwork classes and still have some of my projects sitting in my toolbox. Unfortunately, my swarf credibility is limited only to those awards, so I can only supply a picture of my 33 year old tool creations.” *(at right)*

At one stage Clayton secretly rebuilt his dad’s R100S BMW 1000cc motorcycle’s blocked carburettors as part of a surprise present to get it going again after a long time of non-use.

This, along with a general “service” and new battery, saw the Boxer engine fire into life again, albeit running a bit lumpy, due to a pitted float needle and seat.

“I’m still not sure if his (dad’s) reaction was a look of elation or one of horror on the realisation that I’d got my hands on his Beemer!”

Around this time, young Clayton ventured into dad’s shed and found a box full of grandad’s old tools and other “stuff”.

One item of particular interest was an old boiler and steam engine, in very poor condition. Clayton quizzed his father about it and was told it was his grandfather’s old scratch-built steam plant, which he (Lyall) intended to rebuild at some stage. That was back in around 1987.

“From that time on I became a rev-head teenager (also a genetic trait from Lyall!), getting my licence in 1990. After a couple of years I bought my first car, a bright Red 5.8 litre V8 Ford Falcon. It was a rocket!

“I spent many weekends tinkering with that beast, rebuilding, extracting extra horsepower, and using mum and dad’s driveway as a workshop to replace clutches and

*(Continued on page 11)*



## 2-stroke mower to 4-cylinder King (cont...)

(Continued from page 10)

gearboxes that seemed to occasionally vaporise on Friday or Saturday nights.

"I still own that car, but it needs some TLC after being in storage for nearly 20 years.

"The years ticked by. I went to university, moved out of home and that old box of grandad's gear kept gathering dust. I'd see it sitting there when visiting my parents and I would prompt dad to get on with rebuilding the steam plant."

Fast forward about 20 years to around 2019 and Lyall now had four grandsons, aged 13, 14, 15 and 15.

"Then, out of the blue he mentions he's finally rebuilding the steam plant," Clayton recalls.

"This is one item I'm sure most NDMES members will be familiar with. My brother and I attended its first steam test at Parkerville. (see photo at top right and also *Steamlines* July-August 2018 for the full story of Lyall's steam plant rebuild).

"It was such a nice occasion to see it finally up and running. The boiler was all new, reflecting dad's work, and the engine was restored to a level true and considerate to grandad's original creation. It was

finally completed, 30 plus years after I found that old box of grandad's stuff!"

Clayton remembers that it was about this time Lyall also found his old Hornby Flying Scotsman set and gave it a service.

"Forty years later, it still runs very nicely and is now set up in my home office.

"The steam train bug and nostalgia was itching again!"

*Next issue we will conclude Clayton's story with some details and photos of his new interest in Gauge 1 steam.*

*Article by Tom Winterbourn and Clayton Austin*



Above: Lyall Austin on completing the steam test of his rebuilt steam plant, January 2019.

Photo: Jim Clark

## Death of club patron George Strickland

NEWS has reached us of the unfortunate passing of George Strickland, the society's patron for 31 of our 35 years. A former Mayor of the City of Stirling and a State Parliamentarian, George was the NDMES patron from 1988 until his death on June 23, 2019. He was 76.

The last time he attended the club grounds was as an invited guest at our 30<sup>th</sup> anniversary gathering in February, 2015. George's widow, Helen, advised us of her loss when responding to an invitation to attend our planned reunion for our 35<sup>th</sup> anniversary on August 30, 2020.

She stated: "It is with sadness that I have to tell you that my dearly beloved husband George passed away on the 23<sup>rd</sup> June, 2019.

"Please convey to the members of your club that George had a real fondness for NDMES and the work that you do.

"Just before George passed away we were blessed with a little great-grandson. I would love to think I could one day bring him down to the club to enjoy the facilities there.

"All the best to all members of the club and congratulations for what you are achieving in the community."

One lasting reminder of George's patronage is the plaque on the north side of footbridge over the railway lines. It reads: "This bridge was officially opened by Mr George Strickland, JP, MLA, on behalf of the Western Australian Government, City of Stirling and corporate sponsors. 15 April, 1998".



NDMES patron George Strickland (right) enjoying our 30th anniversary gathering in 2015, seen here with former NDMES president Doug Baker (at left).

George became NDMES patron during Doug's inaugural presidency and was a great supporter of the club over many years.

George, a former school teacher, was Mayor of the City of Stirling from 1986 to 1988 and the following year he entered the WA Parliament as the Liberal Member for Scarborough, later becoming the Member for Innaloo. He became Speaker in 1997 and was the last person in that role to wear the wig and cloak of office. He left Parliament in 2001 after 12 years.

*Article and photo by Tom Winterbourn*

# Cromford & High Peak Railway

IT is funny how memory works, sometimes a word can set off a chain reaction of memories. At a recent Boiler Group day, Rob told me about a preserved beam engine at Middleton Top in Derbyshire. It had been used on the Cromford and High Peak Railway (C&HP).

Memories flooded back from when I was the locomotive shedmaster at Buxton. I had never heard of the C&HP until I started working at Buxton in 1962 and was told that I was responsible, with Rowsley Motive Power Depot, for the motive power for it. Within a short time Rowsley was closed so we were responsible for providing engines to the C&HP.

We also ran trains to Friden Brick Works and picked up wagons from the numerous quarries and small mines, including a talc mine. I have previously written about the C&HP and the winter of 1962/3 in Steam Lines November-December 2018.

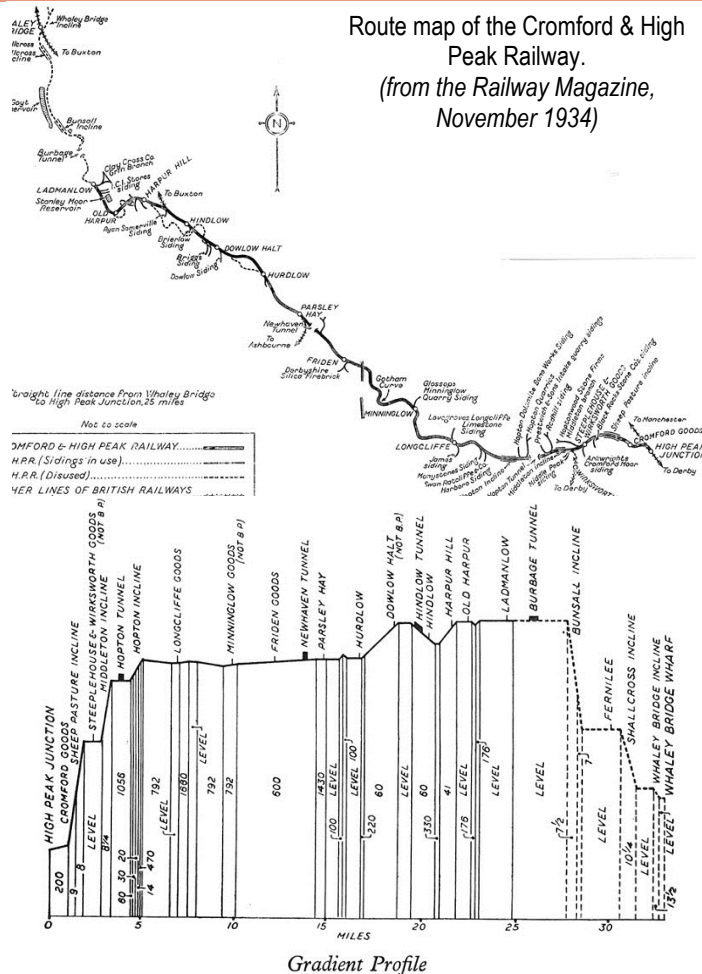
In the early 19th century, freight transport links between the different regions in Britain were almost non-existent: Canals were being built and railways were starting to be built. There was a need for a link between the Midlands agricultural and industrial regions and the industrial workshops in Lancashire. Initially a canal was proposed to connect the Cromford Canal and the Peak Forest Canal at Whaley Bridge. This was changed to a railway in 1825 and the rail line followed the proposed canal route. The flights of locks were replaced by eight inclined planes.

A 19th century writer described the C&HP as follows: "The sky scraping High Peak Railway with its corkscrew curves that seem to have been laid out by a mad Archimedes endeavouring to square the circle."

The C&HP was completed in 1831. It was a unique railway, it stood in isolation, but soon attracted interest from other railways. During the 'Railway Mania' the Midland Railway (MR) wanted to extend its railway to Manchester and enlisted the help of the Manchester, Sheffield and Lincolnshire Railway, and the Manchester

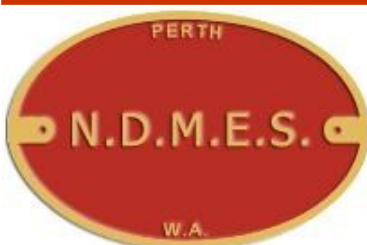
Route map of the Cromford & High Peak Railway.

(from the Railway Magazine, November 1934)



and Crewe Railway, to connect with the C&HP and get to Manchester through Buxton, but the London North Western Railway (LNWR) already had a line to Buxton and blocked the MR. In 1890 the LNWR took over the C&HP and closed down the section of the line from Ladmanlow to Whaley Bridge. The LNWR then opened a line from Buxton to Ashbourne and connected the C&HP to it at Parsley Hay in 1892 and 1899.

To be continued next issue... Article by Bill Walker



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