

**STEAM****LINES****NORTHERN DISTRICTS MODEL ENGINEERING SOCIETY (PERTH) INC.****March — April 2020**

# ***Parkerville to Perth rail service reinstated?***

WELL, perhaps in miniature only, with the inaugural appearance of Ron Collins' magnificent Crampton locomotive at the club run day on Sunday 16 February.

The front buffer beam of Ron's new engine is emblazoned "Parkerville — Perth", a whimsical reference to an original Crampton loco now in a French rail museum which has "Paris á Strasbourg" on its buffer beam, and perhaps a reminder that a full size rail service did once exist between Perth and Parkerville.

Those who have been to the Boiler Group at Ron's on Wednesdays have seen this loco steadily developing over the past couple of years. It will be no surprise to anyone that it ran as well as it looks — the phrases "Swiss watch" and "like clockwork" come to mind, but don't do justice to its throaty exhaust beat. The large driving wheels give it a good turn of speed while the wheels and valve gear appear to be going in slow motion. It certainly did many good laps on Sunday.

Apparently it also has a "stealth mode" as noticed by the club members during the meeting on the covered veranda, when Ron and loco sidled quietly up beside the fence and sat hissing very gently in the background.

A few minor items remain to be sorted and hopefully we will see the Crampton out and about at future runs.

Altogether this project has been an inspiration to other members and is a credit to its builder. Well done Ron!

*Article and photos  
by Jim Clark*



Left: The man himself, pensive here, but pretty happy I'd say!  
Below: 'Loping along'. Those big driving wheels are deceptive.



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## President's Report for February 2020

ONE of the highlights of the past couple of months was the February club run day.

We had a good attendance with approximately 30 members turning up on the day and we managed to keep the monthly meeting down to just short of an hour. Having a quorum meant that we could resolve a few outstanding issues.

There were seven locomotives running on the garden railway and another seven on the other two tracks at various times.

Of note was Ron Collins' Crampton, which just loped around the track with seemingly little effort (*see article on page 1*). It's a very nicely finished locomotive and I'd be surprised if it doesn't get some mention at the AALS Convention in April.

Other 'new' locos were Phil Hartley's class 4 and the Blowfly that Paul and Clive have recently rebuilt (*see article on page 8*).

The January public run day was a reasonably quiet affair because, being on Australia Day, it seems many people had made other arrangements. However, it is very pleasant to have a less frantic day and get time to enjoy the day ourselves!

The February public run day was well attended with a number of birthday parties. I took some time to walk around all the groups in the picnic area and received only positive feedback from everyone, so well done all.

We received an unexpected visit from our two Hamersley ward Stirling councillors at the February run, Karlo Perkov and Chris Hatton. Both were very impressed with the way we manage the public. Points we discussed were rear access to the grounds, public BBQ facilities, additional shade for the queue on the stairs and shade for the station approach.

At the General Meeting on Sunday, February 16, it became apparent that there was very little appetite for a school holiday run during the April school holidays. The timing would coincide with the AALS Convention over East, which will be attended by a number of our usual drivers, and seemingly we will be unable to get enough members on that day to be able to operate safely.

It was decided at the meeting to accept the BMX club's offer for their cleaner to perform the toilet cleaning duties on our behalf. The costs will reduce by more than 50 per cent. I pointed out to the BMX president it would be ideal if the toilets could be cleaned after their Friday night event and prior to our Sunday run. I met the cleaner (whose name I've already forgotten) on the Saturday before the February public run and she appeared to be doing a good job in getting the toilets ship-shape for our event.



**President's Report  
By Geoff Wilkinson**

Let's hope that we can re-establish some good working relationships with the BMX, our closest neighbour.

Our bank balance is still very healthy and our income is keeping pace with our expenditure. We do have an upcoming AALS insurance obligation that will dent the bank balance somewhat, however this is not an unscheduled expense. We have notified all members separately of the policy details, which are now with a new provider. The policy cost is based on a fairer way of calculating the premiums and relates to both the number of members and the club turnover, so it is probably a bit fairer overall.

All in all, we've had a positive start to 2020 and we have a few projects planned to improve club facilities. Projects we currently have in hand are:

- ♦ Complete re-arrangement of club room upper floor
- ♦ Re-furbish club room foyer
- ♦ Run water and power to the Garden Railway
- ♦ Re-arrange downstairs workshop area.

One of our newest members, Bill Beattie, has put up his hand to manage the workshop.

We are planning to put some emphasis on road vehicles for the March club run day and will advise members of this in the next week or two. **Geoff Wilkinson, president**



Councillors Chris Hatton and Karlo Perkov at the February public run day, with Steve Briggs and Geoff Wilkinson. Photo: Tom Winterbourn



## AMRA Exhibition 2020 — update

LAST August an expression of interest was requested from the AMRA executive for this year's AMRA exhibition. Members at our monthly meeting clearly supported establishing another exhibition as it was felt the last one in 2019 had been very successful.

This year's planning is well underway and a display area the same size as last year (8 x 4 metres) has been requested. This is an excellent opportunity for members to display all aspects of model engineering and we are looking for a variety of models and projects to display. These will include both static and working models and, of course, projects in various stages of completion.

Compressed air will again be available to run models as in the past and a steam-up bench will be provided. Please note that the usual set up and operational safety requirements are mandatory as at previous exhibitions.

A separate area at the front of the pavilion will be made available for traction engine steaming and running and Steve Reeves has offered to organise this part of our display. A roster is now available for members to list models they wish to display and days they are available.

Please give some serious consideration to exhibiting some of your work — the more variety the more interest for both the public and other members.

Entry to the Claremont Showgrounds for exhibitor parking will again be through Gate 1 and members will need to show a club badge or suitable identification to gain entry. Members attending will be notified of the availability of exhibition entry passes in due course.

In conclusion, we look forward to a well supported and successful weekend which will promote our society in the eyes of the general public and publicise the hobby of model engineering.

### Exhibition Dates:

**Set up** Friday 29 May (time TBA).

**Exhibition days:** Saturday, May 30, Sunday, May 31, and Monday, June 1.

**Opening hours:** 10:00am - 4:00pm daily.

Please note: We need to be on site each day at about 9:30am.

**Pack up** will be from 4pm Monday, June 1.

Event Coordinators: *Paul James and Steve Reeves*

## Calendar of Events for 2020

<b>General Meetings</b>	Second Friday of each month	Meeting starts 8:00 pm — for members and visitors
<b>Club Run Days</b>	Sunday following general meeting	Open to members and their guests from 9am
<b>Public Run Days</b>	Last Sunday of each month (except December)	Open to the public 10am — 2pm
<b>Special Events</b>	As notified during the year	Details will usually be published in Steam Lines

*The Calendar of Events may be subject to change. If in doubt, please contact a committee member — 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>

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

## Protecting your new steel boiler

NOW we have finished our steel boiler, we must protect the outside of the boiler. My preference is for red oxide paint, but the very best is to have it shot-blasted and paint it with a high temperature inorganic zinc silicate paint — see Phill if interested in this.

On no account be tempted to leave it unprotected, as I recently did a repair on one such boiler which had lost 1mm in two years on the outside, due to no paint!

Stainless steel sheet is my preference for the cladding, available from your local sheet metalworks — while you're there, get them to cut the metal to your requirements.



**Engineering Matters  
with boiler inspector  
Phill Gibbons**



'Zincanneal' galvanised mild steel sheet is another option, but the photo at left shows what happened to the cladding on my 'Irma' after just two years. This was mostly due to water being held in the insulation between the boiler and cladding.

Now to insulate or not to insulate. First choice is to use no insulation, just let the air space between boiler and wrapper do the job. Most insulation materials will hold water like a sponge and this, with a tiny flaw in your paintwork, or in your

Zincanneal cladding, will give rust a green light, whereas no water no rust!

Next make your boiler fittings — please no brass, use only bronze! This is readily available from the Steel Store or Statewide Bearings, both in Welshpool. Don't forget to fit the zinc anode which can be purchased at any caravan store or on eBay. For the really good stuff, go to a ship's chandlery, as it sells the pure stuff.

It's not a requirement, but if you have included two blow-downs in your boiler they will help to keep your boiler clean. Point one of them downwards for blowing the boiler down in the steam shed, point the other one out at right angles and use it to let loose half a glass every hour or so while on the run to clear out mud build up. Obviously, use a bit of common sense where you do this, not next to bystanders.

On your first steam-up, heavily dose the boiler with tannin using two or three times the normal amount and fill your boiler right up to the safety valves. This is to

coat the whole of the inside of the boiler with a protective coat.

This raises the subject of tannin and now comes the nest of vipers — this is only my opinion and many with more education may disagree. This discussion has generated quite a few email comments from others, which will be included as we go along.

There are three main things to know and they are easy to understand when informed.

Firstly, pH is a figure expressing the alkalinity or acidity of a solution on a logarithmic scale, which goes from 0-14 where 7 is neutral. Lower values are acidic, higher values are alkaline. pH test kits are usually available from pool shops.

Secondly, tannin which is a yellow-brown, bitter tasting organic substance derived mainly from tree bark. It offers a dual corrosion protection mechanism since it not only removes oxygen but also forms a corrosion resistant tannate film on the boiler steel. It is very good at protecting stored and intermittently used boilers and is suitable for low pressure. It is also a great oxygen scavenger when the boiler is operating. It is diluted around 600:1 but refer to your dealer's instructions.

Thirdly, soda ash or sodium carbonate. This is a water softener and increases the alkalinity. It is available from Bunnings, eBay or your nearest pool shop.

Now we have the three players together what does it all mean? Ideally we need to run our boilers at around pH9. Town scheme water is usually a little alkaline around pH7 or 8, rainwater should be neutral or slightly acidic. So next we add our tannin at the recommended dose, check the pH of the solution and add soda ash sparingly to get to pH9, then off you go — all good.

One of our members has a separate drum he mixes his boiler brew up in, gets everything correct then uses a little electric pump to fill the boiler. This is probably the very best way to control what is happening.

Your boiler can be stored wet or dry, depending on usage and your preferences. This subject will continue over the next few issues when we will discuss options.

*Phill Gibbons*

### Handy hint

I have been doing a little milling lately and must be getting a little forgetful. At the end of the job I wound the cutter the wrong way, nearly scrapping the workpiece.

So tip for the month is to get into the habit of stopping the cutter *before* winding it away from the job. It just may save the scrap bin from filling up prematurely!

*Phill*



## Transportation to Tasmania (cont...)

*The Gilbert Ness article continued from Jan-Feb 2020 issue*  
**The June 2016 floods**

As mentioned in the last issue, the TasRail network suffered many locations with embankment washout and structural damage during the 2016 floods. However, at Kimberley on the Western Line, where the railway crosses the Mersey River, one span of Kimberley Bridge was lost as a result of scour under the western abutment. This was a major blow to our business, as our arterial route to the port of Burnie was severed.

TasRail immediately put plans in place to convey intermodal traffic by road around the affected area, such that our customers had minimal impact to their businesses.

I was given the task of project managing the replacement of the span which ended up in the river together with the approach embankment. We mobilised a team of local contractors to commence works on site as soon as the flood waters had receded sufficiently for staff to work safely. The new bridge span was fabricated locally in Launceston. The headline which we are immensely proud of is that the new bridge and approach embankment was ready for the first train, 45 days after the flood event! Check the pictures out – they show the magnitude of what we were faced with.

### Infrastructure renewal continues

Once we had recovered from the dramas of the 2016 floods, it was back to the program of infrastructure renewals. I have included a short description and a selection of pictures of the variety of works we have carried out over the last four years and indeed are continuing to deliver for the next four years.

One of the most important aspects of railway asset management is being able to accurately measure track geometry. Track geometry measurements include: gauge, alignment, top, cross-level, twist and curve radius. This project scope was to use world class contemporary measurement equipment, fitted to a dedicated rail vehicle which could be attached to any revenue earning train. In actual fact, the two half size containers are filled with steel rails to provide an axle loading of 16 tonnes, such that measurements are made under the dynamic weight of a train. The laser scanners can be seen just behind the bogie in the picture below.



Above: Collapsed bridge span at Kimberley.

Right: Washed out embankment on the Mersey River at Kimberley.



Below: The first train crosses the new bridge span at Kimberley.



Earthworks which support railways, not only in Tasmania, but all over the world can present stability challenges to the safe passage of trains. Invariably, embankments are constructed from the fill material taken from the nearest cutting. On many occasions the material does not have the load bearing characteristics required to support the loads of trains in the long-term. Pictures on the next page show two locations where we have removed unsuitable embankment material and replaced it with a designed structural capping layer. These projects have assisted in delivering permanent solutions to long standing speed restrictions and on-going maintenance challenges. It is always a relief to complete the works in time for the first train to pass!

*(Continued on page 6)*



## Transportation to Tasmania

*(Continued from page 5)*

**Bridges** on the network are vital assets for carrying the railway across openings (usually waterways). One such bridge which we renewed over a three day track closure, was Elizabeth River Bridge at Campbell Town on the South Line.

The original multi-span bridge was replaced by a pre-cast concrete structure. All the pre-cast units were constructed in Ulverstone Tasmania, by a local contractor. The normal 30 hour “no train period” over a weekend was supplemented by one further day by way of the Easter Monday public holiday.

The job was a great attraction to the locals and visitors, with many having set up BBQs and camping chairs at the position where I took the picture (*see below*).



**Sleeper and Rail Renewal.** Much of the TasRail track has been targeted for sleeper and rail renewal. The legacy 60 and 63lb per yard (31kg/m) rail is being upgraded to modern 50kg/m. The newly designed steel sleepers offer an additional 30% of lateral stability relative to the legacy ones. Together with inducing a tensile force in the new rail, this is a very useful characteristic which resists the tendency of track to buckle in times of hot weather.

### **In conclusion.**

I hope that this brief summary of works, which I am closely involved with, has provided you with an insight into the major network rebuilding works being carried out on the TasRail network. Freight traffic is continuing to increase and the reliability of the assets is continuing to improve — all of which points to market confidence in the logistics service offered by TasRail.

I have not touched upon my involvement in the miniature engineering world in Tasmania, of which there is much. So I sense that there may need to be a further article developed for a future edition of Steam Lines!

*Article and photos by Gilbert Ness*



Earthworks: Above: A new embankment and formation under construction at Dunorlan on the Western Line.

Right: The first train passing after rebuilding the embankment near Colebrook on the South Line.



Sleeper and Rail works: Above: A new turnout being installed at Parattah on the South Line.

Right: New steel sleepers being installed on the Bell Bay Line.





## The Stuart Turner 27 (well, three 9's anyway...)

QUITE a few members will have seen my Stuart No 9 which has been taken to exhibitions and run on air.

I built that in 1981-1983 and it was one of the first engines I made on my then new Myford lathe.



I bought the castings from Stuart Turner when they were still in Henley-on-Thames, their entrance being through the old Coach House in the town square.

When I finished that engine I must have had some form of mental aberration (I blame solar flares or the planets being misaligned) because I bought two more sets of castings. For what purpose has now been lost in the mists of time — let's face it, this was 36 years ago, half my lifetime!

I still have the original invoice and the prices for castings then seem relatively cheap, but compared to the lower wages back then they probably weren't. The engine castings were £25.50, the feed pump was £3.50 and the governor £4.00 - all plus 15% VAT.

For comparison *now*, the engine castings are £384.80, the other two are £94.90 and £72.80 respectively, plus 20% VAT.

Out of interest, the price for a single *machined* 'bare' No 9 engine (no pump, no governor etc.) is now an eye-watering £3006.10, plus 20% VAT. A machined governor is £275.50 + etc. If I could find anybody wanting to buy them at that price I could probably survive on the income from making them!

I did some work on the extra castings straight away and even got Ron Collins to machine a feed pump for me, although I'm sure he won't remember it. I then lost interest and put them aside for 30 or more years during which time I built a lot of other stuff.

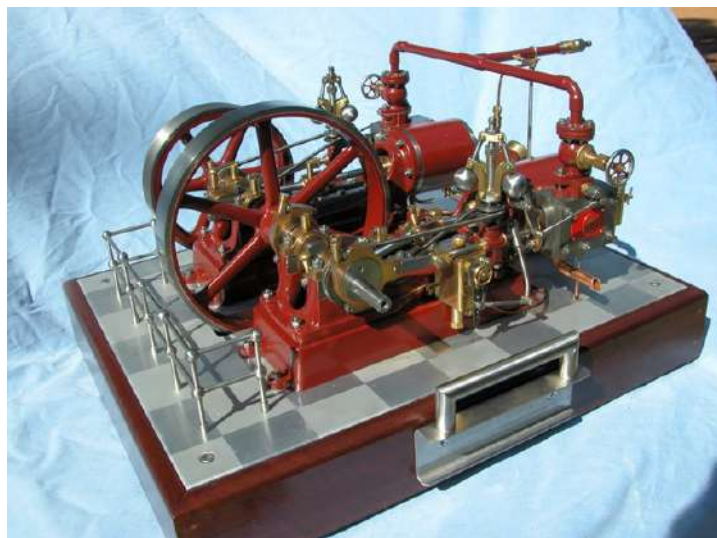
Well, quite some time later I looked at these bits and pieces and wondered what to do with them — I wasn't about to finish-machine three identical engines in a row! That would be somewhat eccentric — I could be thought of as being obsessed...

So that's how I came to build a twin engine, one number 9 cylinder inverted, one governor fixed to the opposite side, and the rest the same, with a common crankshaft and the flywheel for an Allchin traction engine keyed in the centre.

There isn't anything particularly clever or different about what I have done although some minor details are interesting, which I will detail in the next part of this article. *To be continued in the next issue...*



Above: Laurie's original Stuart No.9 engine.  
Below: The twin engine built from extra casting sets.



Above: Another view of the unusual twin engine.

*Article and photos by Laurie Morgan*



## February club run day

THE February general meeting was held on Sunday, February 16, in conjunction with the club run day. There was a good turnout with over 30 members and several visitors present.

Among the visitors were Mick Symonds and his wife who attended to see the loco now named 'Ted' running at the track (see photo at right). 'Ted' is a Blowfly built by Mick's late father Ted Symonds and was presented to the club by Ted's widow.

Clive Chapman and Paul James have been restoring the loco (see January-February issue). It ran very well on Sunday, being driven by several club members. It is an easy loco to drive and is a willing steamer, so it's an ideal loco for club members to get some driving experience with. Meanwhile, Mick recounted some of his memories of it running in the garden at his father's home.

There were several members' locos being tested and although several had to withdraw without seeing much action for a variety of reasons, this is the appropriate occasion to try things out and an enjoyable day ensued, lightened by a relaxed BBQ lunch.

The garden railway saw plenty of action, with all three tracks in use at one stage. It's good to see this aspect of the club flourishing.

*Article and photos by Jim Clark*



Above left: Clive Chapman strikes up a confident pose on 'Ted'!



Above: Phil Hartley was making plenty of steam on his 4MT loco.



Above: New member Clayton Austin attending to his Gauge 1 Southern Railways heavy Mikado loco 4501 on the garden railway, one of several members who were enjoying these facilities on the club run day.

## An emergency boiler shut down

WHAT do you do if you suddenly lose a lot of water from your boiler, such as if a gauge glass breaks?

Or perhaps your injector just won't pick up and your axle pump or tender pump aren't keeping the water level up.

Then the water level suddenly disappears below the bottom nut of the gauge glass... Quick, drop the fire — oops, I can't do that out on the track! (I don't have the right tools, the ashpan won't open, I might set the world on fire!).

What do I do now — panic?

No! Fortunately, there is a simple and effective solution:

Stuff a rag down the chimney (or a glove if you didn't bring a rag), close the firehole door and turn on the blower. If you have ashpan dampers, close them too.

This will starve the fire of oxygen by stopping the air draught. Steam from the blower will also be forced back through the firetubes, further smothering the fire.

The fire will be quickly and safely extinguished. Now you can retreat with some vestiges of dignity intact and push your loco into a siding or back to the steaming bay.

Thanks to David Naeser for this handy tip.



## A club record load at holiday run?

THE school holiday run on January 21 was pretty full-on, with a well-organised group of 48 children from the Whitfords-based Little Buckets Out of School Care group a feature of the day.

Unfortunately, two steamers failed to make it to the starting line, with Tom's Black 5 suffering injector woes (again!) and the club loco having steaming problems, despite the best efforts of Phill Gibbons and Paul James.

This put a little pressure on the locos which did operate, Dave Robinson's ever-reliable yellow diesel, the club's orange diesel outline and John Jenkinson's "Jumbuck" on the ground level track and Paul Costall's "Firefly" and the club's battery loco on the raised track.

With 36 children, a carer and guard (Sue Smith), this has to be something of a club record number of bodies on one four-car train. Can anyone dispute this?

*Tom Winterbourn*



Above: Dave's diesel heading a four-car train loaded with 36 Little Bucketeers and one carer. Photos: Tom Winterbourn



Steve Briggs and the club diesel hauling the remaining 12 children and their carers.



Left: It was good to see George Palmer back in the saddle, sharing the driving on the orange diesel with Steve Briggs. Photo: Geoff Wilkinson

## Material for Steamlines

ENJOYING reading the latest issue of Steam Lines?

We always need more material to keep it interesting, so if you have photos, notes or some other info about a project you're working on, please let me have it.

I always make a point of acknowledging all the emails that I receive, so if you send me something and you haven't heard back from me in a day or two, your email hasn't got through.

There are many reasons why emails don't always come through: these can include the attachments being too big, something in the subject line, text or attachment causing it to be classified as spam, a temporary email server outage or just plain bad luck in cyber space. Not every email is guaranteed to be delivered!

So if you don't get a timely response from me, please try sending again. If you have several photos, perhaps

send each photo in separate emails in case the total attachment size is too large.

You can also call me or send me a text message on 0407 988 746 to let me know you have something for me (but please don't send attachments to my phone, as I have an old fashioned one!)

And don't forget Steam Lines is not a commercial operation — so you don't assign away any of your rights to your articles or photos if you publish them here for the benefit of other members. The copyright remains with you and you're free to use the material elsewhere if you want to.

So if you have something you intend to send along to AME or UK Model Engineer, why not publish a summary here? It would be nice to say that we read about it in our club newsletter first!

*Jim Clark*

## Valve gear in early locomotives

*Continued from January-February issue...*

IN 1830, the first modern twin track inter-city railway was opened between Liverpool and Manchester. These were the boom towns of the era: Liverpool was a major port for North American cotton and Manchester a textile manufacturing centre. Before it opened the new railway ran a competition in 1829, to find the most suitable locomotive to haul their trains — the Rainhill Trials.

Robert Stephenson's *Rocket* won the competition and the contract to supply locomotives to the new railway. Today the *Rocket* is considered the first modern locomotive, however it was a prototype built specifically for the competition and was preceded by a pre-prototype called the *Lancashire Witch*.

The *Lancashire Witch* was the first locomotive with a valve gear that used steam expansion to haul the train. A brief description of the valve gear states that a toothed bevel wheel was fixed to an axle which turned a horizontal bevel wheel attached to a vertical shaft that passed through the boiler and operated a rotating regulating plug valve. When the regulator was opened the plug valve proportionally cut the steam off for half the piston stroke and was fully opened for the second half of the stroke. Using the expansion of the steam saved fuel. In practice the steam cut-off was used at the beginning of the run and full steam used whenever full power was required.

The valve gear on the *Rocket* was different, the valves were operated by two fixed eccentrics, one for forward, one for reverse, both were fixed to the same axle. Only one eccentric was engaged at a time by a dog-clutch on the axle moved by a movable sleeve. This is shown in the diagram below right, showing forward and reverse.

The whole arrangement is shown in the diagram below left, with the reverser mechanism highlighted in red.

The driver of the *Rocket*, when he was preparing to change the direction of the locomotive, first shut the regulator to bring the train to a halt, then before it stopped the driver stamped on the foot pedal of the reverser, this moved the dog-clutch, disengaging one of the eccentrics and moving the clutch across to the other eccentric. If the eccentric did not engage then the driver had to operate the valves by hand.

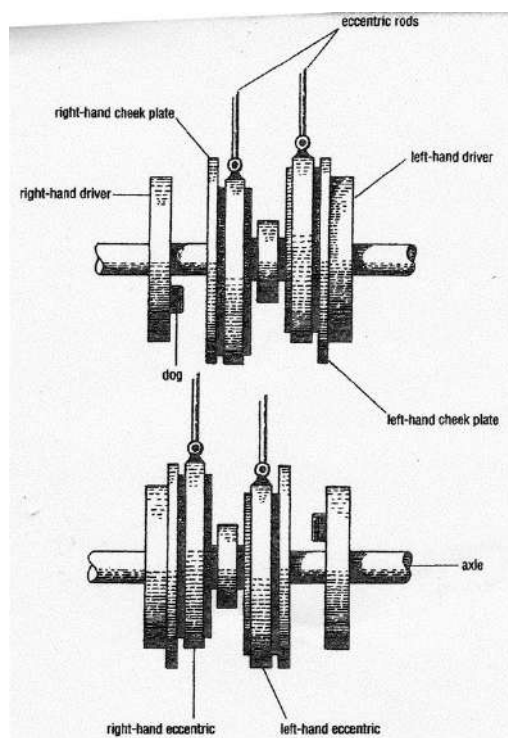
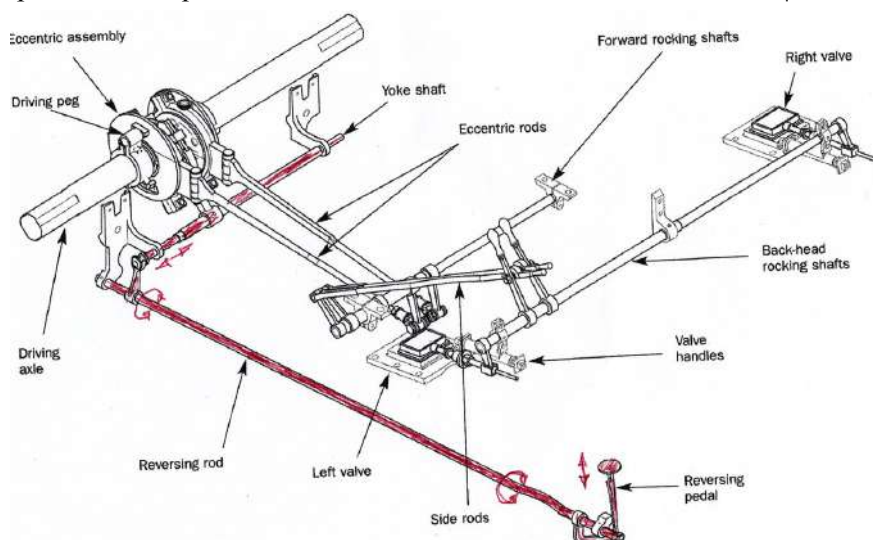
Clearly, some skill was needed to reverse the *Rocket*!

*To be continued in future issues...*

**Article by Bill Walker**

Right: McGowan, C.  
The Rainhill Trials,  
p.172

Below: Bailey, M.R.  
and Glithero, J.P. The  
Stephenson's Rocket:  
A history of a  
pioneering locomotive  
p.28



*Rocket's forward-and-reverse mechanism, seen from the front, showing the eccentric assembly moved to the left (top), and to the right.*

## Odds and ends...

**FOR SALE: Brass sheet.** I have a full sheet of 1.0mm and another of 1.6mm brass on order. I will only need about half of each sheet for boiler cladding and tenders, so if anyone is interested in a half or quarter sheet at cost, please contact me.

Jim Clark: 0407 988 746

**KATANNING:** We have the event in Katanning to look forward to on Sunday, March 22. This is being organised by Katanning Miniature Railway to welcome back their 'Heidi' steam locomotive, which has a new steel boiler recently built by Phill and Ron.

Visiting 7<sup>1</sup>/<sub>4</sub>" locos will be welcome to run on their track and it is proposed to have traction engines running on the various pathways.

It would be great to see a good turnout of NDMES members there.



## The lasting legacy of a 'diamond in the rough'

*THIS is the second part of an article looking at the extraordinary range of model engineering projects undertaken by our Canadian member Doug Pitney.*

Following retirement from UWA, Doug spends his summers in Perth, working on his latest projects with visits to our club while escaping from the harsh Canadian winters. In part 1, we detailed how this academic struck up a friendship with Glaswegian "diamond in the rough" Ted "Eddy" Sturgeon, who fashioned model engineering masterpieces on the most basic of lathes and engineering tools. Under Eddy's tutelage and with zero engineering experience, Doug embarked on a project to scratch build two seven-cylinder radial aero engines: "one for you and one for me", to quote the master!

Sadly, Eddy passed away before the project was completed, so Doug finished his engine in his workshop overlooking Okanagan Lake in British Columbia.

Doug is proud to wear the moniker "Eddy Sturgeon's last apprentice". The rugged Scotsman's influence resulted in him taking on a most diverse range of model engineering projects. Doug now continues his story:

"After seeing the beautiful work Eddy produced and his life-long enthusiasm for model building, I decided to build a hit-n-miss engine (*photo below*).



The plans came from the US, aluminium from Sims Metals and glass for tiny oilers cut and polished by the UWA Chemistry Department. Fifteen years later it is almost complete, with some ignition issues to sort out."

His next project was scratch-built from archival photographs of the steam tug "SS Kelowna". The 85ft wood-hulled vessel was built in 1922 and worked on Okanagan Lake until 1955.

The radio-controlled model is powered by a three-cylinder Saito steam engine and features 3D printed life boats, deck fittings and winches fore and aft. "So, after about 15 years, she will be Christened on Friday!"



The fourth project was a 4-4-0 early American steam loco in 3½" gauge, (*photo above*) based on LBSC's famous "Virginia". When Doug was asked why in 3½" gauge, he said because it weighed 23kg, which is the maximum allowed as check-in baggage on flights between Vancouver and Perth! The model is based on the "Countess of Dufferin", the CPR loco built in 1872 named after the wife of the Scottish diplomat, the Marquis of Dufferin, who was Governor-General of Canada in the 1870s. In 1885, Lord and Lady Dufferin participated in the Last Spike ceremony on completion of the Canadian Pacific Railroad.

"I changed the outline of the LBSC Virginia to have three domes and a straight boiler profile. Hours were spent drawing metric dimensioned plans that Craig Belcher had laser cut. The link motion eccentrics were turned from bronze bar stock. The eccentric rods and straps were cut as single pieces from 6mm mild steel and machined to fit the eccentrics...a departure from standard practice. It was a rookie experiment that worked like a charm."

The loco runs on air, with only some piping to be completed. Clive Chapman and Phill Gibbons provided invaluable expertise and time in their sheds to keep the project on the rails.

Doug's latest project is, perhaps, the most complex – a working model of a Spanish fairground carousel. Scratch-built from photographs taken while Doug toured villages in southern Spain, it has been five years in the making.

"Thanks to Clive's patience, the mechanical issues have been solved," he said. "I've been learning how to program an Arduino micro-controller for the motor, lights and music. I bought the unfinished animals from a lady in New York."

"I spent three months at a South Perth ceramics club, learning how to paint and glaze the animals. The

*(Continued on page 12)*

## The lasting legacy of a 'diamond in the rough' (cont...)

(Continued from page 11)

weekly club meetings comprised 12 elderly ladies, all making fancy cups for their grandchildren and here was I making lions, tigers, zebras and elephants... great fun!"

Doug said during a stop-over in Fiji on his way back to Canada recently he was questioned by a big female customs officer about the contents of his bag.

"Lions, tigers, etc. I said. She went white and said I couldn't bring those into Fiji. She thought I was carrying animal parts!" All was well in the end and she photographed the animals for Customs and Border Security.



Above: Lions, tigers and horses at large...

The carousel will be about 24 inches in diameter and will have about 1200 LEDs. Tea cup rides and other small details will be 3D printed.

Right: The gears and crank shafts to activate the animals are fitted to platforms laser-cut out of plywood.



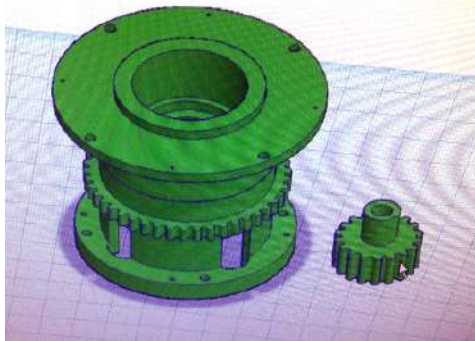
*The third and final article in this series on Doug Pitney will appear next issue. It deals with the work this dedicated educator has done over recent years in ensuring many thousands of children in third world countries have the "tools" to raise their educational standards to prepare them for the challenging life ahead.*

*Article by Tom Winterbourn,*

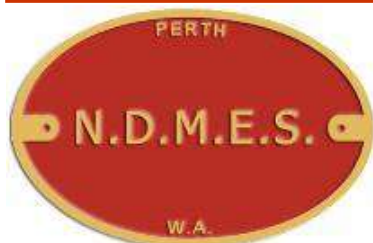
*photos courtesy Doug Pitney*



Above: At Doug's ceramics class, the animals being painted ready for firing.



Left: 3D rendition of driving gears which will be 3D printed.



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