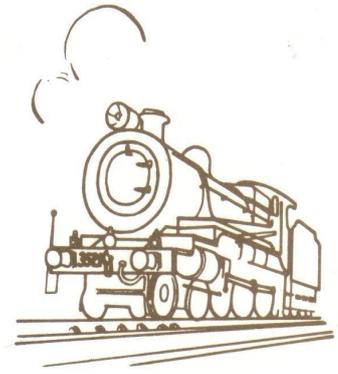


Sydney Live Steam Locomotive Society

Anthony Road, West Ryde, N.S.W.

'Newsletter'

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May 2007



Ross Bishop and Toneya came and helped out on the February Running Day.
Here he is leaving the inner main station with a full load.

Running Day Reports February 2007 Running Day Report.

This was our last running day for the summer season, it was hot and humid but thankfully a light breeze sprang up late in the afternoon to make conditions more favourable. There was one very large party group filling the shady area beneath the trees bounded by the path and the outer main. A few other groups occupied the remaining shady areas with not too many visitors in the sun. The gatekeeper was very busy to start but the rush eased and people came in gradually till very late in the afternoon. Before running began Mick Murray did some bogie inspections and uncovered some significant brake block wear for which new blocks will be sourced. Mark Gibbons & Barry Millner did some maintenance on some

point machines, with the result that the afternoon ran very smoothly.

First train out was visitor Ross Bishop driving his 0-6-2 Fowler "Toneya". We were very pleased to have Ross in attendance as we would have been one train short. Ross was running on the inner as did "Mountaineer" 2-6-2 Alco with Barry Tulloch and Jeff Sorensen sharing the driving. With the two narrow gauge locomotives on the inner it was appropriate to have two 1½" scale locomotives operating on the outer. These were Warwick Allison WAGR V1224 and Henry Spencer TGR "R" class, Max Gay shared the driving with Henry. Matt Lee intended to run Ray's C3506 but had not packed his riding truck so his day ended before it started.

Up on the elevated Jim Leishman ran his 10 wheeler with three cars and a van, I shared the driving and guard duty with Jim through the afternoon. John B.Hurst double



David Thomas and John Hurst run a B10 & O1 double on the elevated track.

headed his 2-8-0 "Nigel Gresley" with David Thomas 2-6-0 B10 at the head of a four car train. The third train and the last one to finish running was Paul Taffa 0-4-0 Hunslet with two cars. The B10 had been in shops for crank pin repairs and ran well.

The train loadings were very varied through the afternoon, one train could be very light on where as the next fully loaded. On one occasion as Jim's train headed down the hill Max was at the regulator of the R class coming up the outer main with only one passenger and Henry as guard. Max had his hat blown off his head, it was brilliantly caught by the passenger and handed it to Henry. Talk about a classic catch.

Generally we were a bit light on for staffing, with some platforms having the guard double as stationmaster. The result of 1698 rides was very good for a February day. As well we sold a record 21 postcards!

Despite the hot weather and the dryness of the ground

David Lee and the GMs first revenue hauling run, double heading with Max on the R (and Henry supervising from the guard's van) on the outer main.



our locomotives there was the slightest hint of a southerly breeze that started to make conditions more pleasant.

We had a good crowd. There was one party with a huge number of seven or eight year olds that provided some interesting train loads without much adult supervision. David Lee had his GM diesel outline locomotive in revenue service for the first time. David ran with Henry Spencer, TGR R class, till well into the afternoon when the batteries started to run down. This train ran on the outer, the GM looks good and the sound generator adds to the atmosphere. Max Gay had some time at the regulator of the R class. The second train on the outer was Ray Lee with his C3803. The inner trains were hauled by WAGR V1224 with Warwick Allison and Scott Murray sharing the driving and "Mountaineer" 2-6-2 with Barry Tulloch and Martin Yule taking turns at the regulator.

We had three trains in service on the elevated track. Greg Croudice, QR 4-8-2 tank 3½" gauge, double headed with David Thomas 2-6-0 B10 hauling two cars. David had just fitted a char grate, as per our last newsletter, with good results. He claims less char consumption, less cinder throwing, and very little ash in the pan. Paul Taffa also ran a two car train with 0-4-0 Hunslet. I ran Z1915 double headed with John B. Hurst and 2-8-0 "Nigel Gresley" with a four car train.

About 3.05pm. the first shower of rain fell, I thought that this will send our visitors home, but to my surprise while some headed off many sheltered where ever they could hoping it was just a passing shower. We all got

there was only one small fire, which was quickly extinguished.

March 2007 Running Day Report.

The warm humid weather continued into autumn, we were supposed to have a southerly change early with a chance of coastal showers. By lunchtime the clouds that had hung about all morning started to clear and the sun came out. About 1.00pm as we prepared

wet, but when the rain stopped our visitors lined up for rides once again. We continued running but the rain returned at 3.45pm. John and myself had just departed the station with a relatively full train when the rain started, much heavier this time. Warwick noted "It was fascinating to see a number of trains running in the teaming rain complete with completely soaked crew and passengers!" Yes, it must have looked impressive, we managed to have the locomotives keep their feet and got the train back to the station without delay, we were all drenched. Every one then decided it was time to go home so some very wet drivers and guards were able to pack things away. The air at the elevated roundhouse was thick with WD40. It was good to get home, remove all the wet cloths, put out wallet, key case and handkerchiefs to dry and have a hot shower

We had a visit from Col Hale, President of Wascoe who brought along some pictures of his very nice battery 82 class. We ended up with 1524 rides, which in all was pretty good considering our early finish

April 2007 Running Day Report.

This was a pleasant autumn day, sunny but not as hot as the April running day last year. It was the last weekend of the school holidays and we had some big party groups. Rob Smithers and Alan Mackellar were on the gate, they were kept busy with a constant stream even after 3.00pm. We had long queues all day with an overlap for outer ground level and elevated stations. The last runs were at about 4.45pm. and we managed 2287 for the day.

C38's ruled on the outer ground level. Ray Lee ran C3803 with one train and Lionel Pascoe C3811 took charge of the second train. Tony Eyre assisted Lionel with the driving. The inner track was home to the 1½" scale locomotives with Warwick's 4-8-2 V1224 heading one train with Andrew Allison driving early and Warwick taking over mid afternoon. Henry Spencer TGR R class on the second train was assisted by Max Gay at the regulator during the afternoon. John Hurst's 4-8-2 Mountain was in the GL roundhouse for the afternoon following a successful steam test and trial run earlier in the day.

We had a good variety of trains running on the elevated. One train consisted of five cars and guards van with myself 0-6-0 Z1915, leading John B. Hurst 2-8-0 "Nigel Gresley" train engine with David Thomas 2-6-0 B10 attached banker. We had good loads most of the afternoon and it was not till late that we had a couple of light load-



The March rains came and everyone sought shelter. These were the lucky ones!

ings. On one of these light loads I suggested to John that he cut the regulator back and the 19 and the B (with Andrew Allison at the regulator) kept the train running up the hill. Jim Mulholland 0-6-0 pannier tank, Brian Carter 0-4-0 "Perseverance" and Paul Taffa 0-4-0 Hunslet each hauled two car trains. Gary Butel ran his 3½" C36 class with a flat car load giving it a run in following some major repair work after its recent mishap. Brian Rawlinson gave his 0-4-0 "Blowfly" a run light engine. This was the best display on the elevated for some time. I had fitted a "Rosebud" grate to the Z19 and was interested to see how it would perform. I must admit that I have never been very scientific about how I have fired the locomotive. Running on the elevated it has been the practice to fill the firebox at the station so that there is a good fire by the bottom of the grade to give good steam production for the climb back to the station. I did notice that at the end of the day when the fire was being burnt out that a

It was 38s domain on the outer main in April! Here Lionel Pascoe on 3811 passes Ray Lee 3803 in the outer main station while Henry Spencer enters the inner main station with the R. Trains galore!





John Lyons D wagon. The finish is shellac, to give some temporary protection during construction. Inside the wagon are John's home cast aluminium brake blocks.

thin fire with plenty of blower kept the steam pressure well up and all safety valves lifting.

President's Breakfast and Redkite Kids Day

The President's breakfast was enjoyed by over 20 members who managed to extract themselves from bed a little earlier than usual for Saturday! Following this we hosted the Family Fun Day for RedKite. This included Humphrey Bear. The loco rollup was not good with only V1224, 3112, the B10 and David Lee's Ruston making a show. However everyone had a good time! Ray in particular gave 3112 a hammering with heavy loads and spirited running! They even brought perfect weather!

What's Doing!

Loco and Rolling Stock News

David Lee had his GM down for its maiden voyage! This is a very impressive model of the 4 motor version. He has a 6 motor version on the way too! We all went for a ride and it had no difficulty pulling us around. He has a simu-

Ray Lee trying out a revamped 3112 with a RedKite loading! Photo G Kirkby.



lated GM noise card which certainly sets the atmosphere! David then bravely hired a trailer and took his new loco to the convention where it performed very well and raised quite some interest.

Mick did some bogie investigation work. He has obtained some insertion for replacement of some diaphragms. He is also modifying the design to improve the brakes arrangement and these have been fitted to the red set.

John Lyons brought along his new NSW D wagon. With its shellacked finish it looked very rustic. The brake shoes are aluminium cast in the backyard Lyons foundry!

John Hurst jr had Ken do some successful boiler tests on the King and the 4-8-2 (Baby!).

Ray Lee gave 3112 a test run on the inner main after fitting it with new cylinders of a smaller bore which are supplied by slide valves. The change has been made to reduce wheel-slip and decrease steam usage by making the cut-off around 70%.

2007 Interclub Run

SLSLS will be hosting the first interclub run this year. It is on 30 June (the last Saturday in June) and we have sent out the usual invitations to clubs and placed an ad in AME. Members are encouraged to also bring some locos, don't leave it all to the visitors! It might be a good occasion to re-run the 3½ inch gauge display we did at the 2006 Convention!

The Lawn Mowing Debate. Note from Brian Kilgour

Discussions concerning the "Gardening Roster" have been going on at West Ryde for as long as I can remember. In the recent past attendances have been rather poor on occasions leaving more to do by those there and requiring help from anyone who came in.

The solution does not seem easy, however these are my thoughts and I propose to put some ideas to members now for discussion at the next members meeting.

SOLUTION 1

Increase the number of members on each roster. This will increase the chances of getting a reasonable team together for the running day. Of course this will mean being rostered more often and consequently the number of active participants won't really increase.

SOLUTION 2

Purchase a "Ride On Mower". I have looked at a couple of possibilities here. There are either the "Zero Turn" type mower or more conventional "Tractor Style".

A TORO zero turn unit with a dump cart which was recommended to me costs \$5000+

A TORO tractor style, hydrostatic drive unit vary from \$3000 to \$4000

HUSQVARNA zero turn mowers were

over \$6000. HUSQVARNA tractor style mower at my local (Mudgee) dealer costs \$2800
 All of these ride ons are hydrostatic (automatic) drive controlled by either hand levers or foot depending on the type chosen. All come with a tipping type trailer and a collection system for the grass.
 I have not looked at MTD ride ons. We have one ourselves and it has been very good however there can be a problem with the king pins breaking if the front wheels contact any solid objects. Prices from memory are around the \$4000 mark.

Of course with this proposal we still need members to turn up on their rostered day or arrange for someone else to cover for them.

SOLUTION 3

Engage a Contractor to do the grass cutting for us. Whilst this seems an easy solution I would be concerned that our particular needs – no grass on the track, damage to ground signals, debris in point mechanisms etc has to be considered. I have not looked at the costs involved here. Round the table talk at the grounds suggests that the price would be over \$300 per visit. We will need to get quotes to be able to make an “informed” decision if the membership wishes to go down this path.
 There will still be a need to do other parts of the roster, toilets, etc.

Please consider these ideas and perhaps do a bit of your own investigating. The facts are that the membership is growing older and the onerous task of presenting our grounds for a running day is falling to an ever dwindling band of members, ageing members at that.
 Discussion will be taking place at the June meeting.

Members News

Jack Grierson hasn't been down to the grounds lately & has had a spell in Ryde hospital (early May). We wish him well. Jim Leishman has also had a short spell in hospital after the fitters performed a tone up on him. Bill Richards didn't want to miss out on the action, and he too has had a hospital spell.
 Barry and Elizabeth Tulloch are now very proud grand parents. Susan and her husband have a daughter, Lillian (Lilly) Elizabeth, all are doing well. Congratulations.

Works Reports

Elevated Track

Some of the elevated track beams on 5 sunken posts have been lifted, removing the worst of the dips at the lower end of the grounds. A hydraulic jack was used to lift the beam to the correct height, and the gap created was filled



Some of the members assembled during the RedKite train running! Photo G Kirkby.

with sand cement mix.

John Lyons is scheming an improved elevated stub point locking arrangement. This is long overdue! Thanks John.

Ground Level Railway

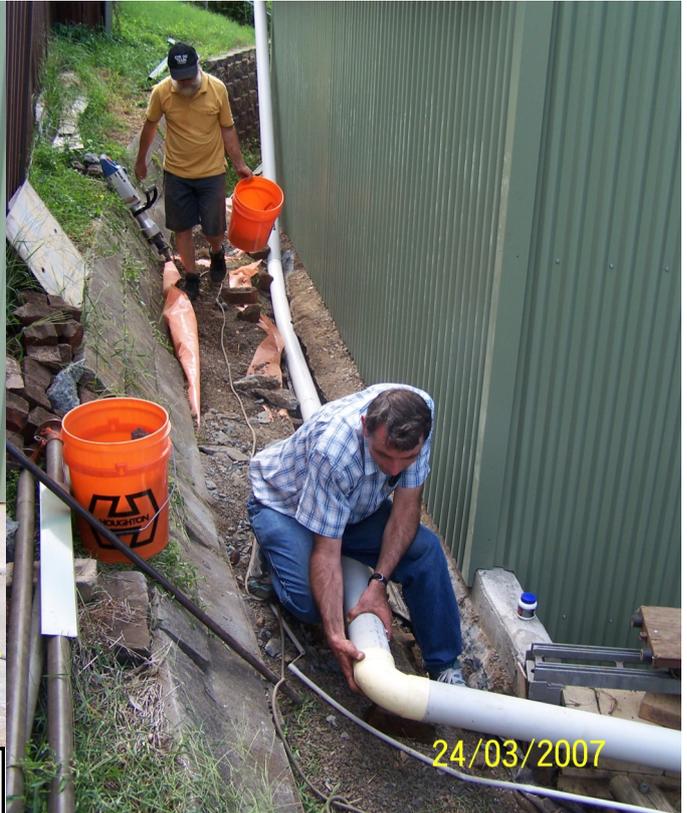
The many miscellaneous pieces of timber from the western side of the elevated steaming bay (where they had been used for toolshed formwork and similar activities) have been moved to an area near the site for the new car shed where they will be used for (more!) formwork.
 Mark Gibbons has been diligently attending to maintenance on the signalling system. Several points have been adjusted and faults corrected.
 In recent months, most of our point motors seem to have become very popular with ants with their nests now sur-

David Thomas on a RedKite special.
 Photo: Graeme Kirkby.





**Above: Martin Yule is supervised by Allan Mackellar while he drills our new drainage hole.
Right: David Thomas and Mark Gibbons lay the drainage pipe from the new shed downpipe.**



rounding many points. It has been suggested that an insecticide such as an ant powder be used to combat this problem.

Apart from some additional excavation work, the new carriage shed has taken second place to the toolshed.

Garden Rosters

In the past the Garden Roster used to be called the “Duty Roster”. This is probably a much better name because it is more than the garden. Tasks that need to be completed include cleaning the toilet areas including the basins and mirrors and removal of cobwebs, vacuuming the clubhouse, rubbish removal and general tidying up. There is a range of tasks that can be done by people of all fitnesses! Group leaders should ensure that all aspects of the roster are performed. Some of these do not all have to be done

The new shed at lock up, after a tidy up. What a relief to regain some sanity to the storage of our gear!

on the one day. While the lawn mowing is usually done the week before the running day, the clubhouse cleaning could be done on any day.

If members are rostered on they really should arrange a swap if they cannot attend, as the work still needs to be done whether you are there are not.

Ground Improvements

John Hurst has provided us a new whipper snipper. It's a 4 stroke, bump line and I am sure there will be a queue to use it! It starts easily and seems lighter than the other models. Bernie did some weed spraying, which is overdue and will be much appreciated.

Mark and Bill attended to the outer main station gate which now opens and closes much easier!

Brian Hurst laid some more turf in our bare patch at the top end of the grounds. This has taken very well, and is well on the way to being a lawn mowing nightmare! We have also cleaned out the ballast pit, and formed up and poured a new concrete lintel to prevent the footpath soil from continually falling in.

Toolshed.

Its done!!! Within the time between newsletters the shed has been built and fitted out. While a lot of members have contributed, there is no doubt that Henry with his liaison to the contractor and then the installation of the electrical system has set a cracking pace that few can keep up



with. Thanks Henry! We have all been impressed with the sturdier structure than what we envisaged and I think everyone is pleased the way the structure integrates with the old clubhouse, and the way we have made the best use of the space.

A second hand roller door ex Mick Murray has been fitted. A rubber strip was fitted by Max Gay and the door expertly repainted by Brian Hurst. The internal walls have had selected weldmesh panels attached for the storage of tools and the protection of the walls. The new gutter has been piped to the Tonkin drain. This involved some jack hammering and a new concrete sump constructed by Mark Gibbons and Brian Rawlinson. David Thomas assisted with the laying and burying of this 100mm pipe. The unloader power supply has been fitted, the telephone cabling reinstalled and the signal power supplies are partly done. Paul and Peter dug the trench for the signalling cables so they are ready for connection. The electrical system includes external lighting as well as internal power. High lighting levels have been provided to avoid those dark corners! Jim Lieshman has provided a pole for the attachment of the telephone line which has now resumed its rightful aerial position and permitted Brian R and Mark G to adjust the telephone wiring.

After all this it was wonderful to fill it up with tools and lawnmowers, emptying the clubhouse and also the old clubhouse, such that we can now move in both of them!

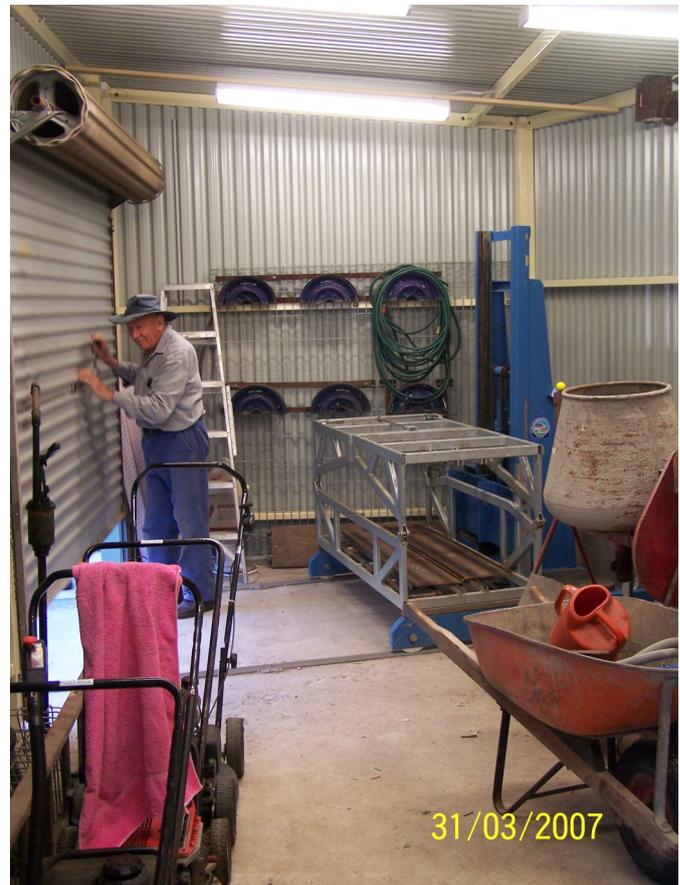
Features

DRAWN & QUARTERED

(A beginner's experience with quartering locomotive driving wheels)

David Thomas

In the process of building my first miniature steam locomotive (a South Australian 620 Class light Pacific) I have learnt new skills and refined old, long-forgotten skills used in the many aspects of this hobby. So far the tender and engine frame have been largely completed and some miscellaneous other parts. Each step seemed to bring a new set of metalwork challenges – designing from full-sized drawings, fine-scale fabrication, sheet metal construction, silver soldering, riveting, interference



Henry closing our new shed roller door, showing some of the well arranged internals.

fits, hand work, lathe work, milling, painting and finding ways to fix mistakes.

Of all the work I feared most was that associated with the critical mechanical operation of the locomotive: manufacture of accurate frames, cylinders, steam chests, valve gear and quartering of driving wheels.

Eventually the loco frame was substantially complete and the wheels fabricated by laser-cutting and subsequent machining and filing. The next step was assembly of driving wheels on their axles and insertion of the crankpins. The axles and crankpins were to have an interference fit of 0.0015” in the steel wheels. To assemble, one

Editorial.

The note from Brian Kilgour re. grass cutting should give us something to consider. We should also look back on the major projects we have completed in the last year and a half. There has been fencing, driveway concreting, retaining wall and ballast dump consolidation, site preparation for the new shed, fitting out the shed and the start of excavation for the new carriage shed. All this while we continue the general maintenance and gardening to keep our site in excellent condition. Some of these have been labour intensive and members have rallied to the cause to complete these tasks. The public patronage on our running days has enabled us to finance these projects with no major stress on our overall coffers.

It all gets down to what we, as individual members, can do to help the Society continue to operate as successfully as it does. On our running days it would good to have just a few more members at times to share the tasks that are necessary to run a safe successful afternoon.

It may be time to look at how we can make things easier for ourselves, but not how it will be easier for some other member to do it.

I have always had the attitude that you get a lot out of anything, such as membership of our Society, if you have put something in.

John Lyons.

Duty Roster

June H.Spencer, A.Allison, M.Gibbons, W.Fletcher, M.Gay, G.Kirkby, B.Muston, J.Noller, P.Sayer.
July W.Allison, N.Amy, B.Kilgour, G.Buttel, B.Millner, J.Mulholland, M.Murray, S.Murray, S.Collier.
August B.Courtenay, K.Baker, N.Lyons, L.Pascoe, J.Sorensen, N.Sorensen, S.Sorensen, D.Thomas, P.Taffa, D.Lee.
September J.L.Hurst, J.B.Hurst, A.Cottrell, J.Leishman, J.Lyons, B.Rawlinson, M.Tyson, M.Yule.

Gate Roster

June. Jeff Sorensen. July. Neil Sorensen. August. Shaun Sorensen. September. Henry Spencer

wheel of each wheelset was placed on our glass-topped stove at home and heated to blue heat. Each axle was simply inserted, located by the stovetop, and the electricity turned off.

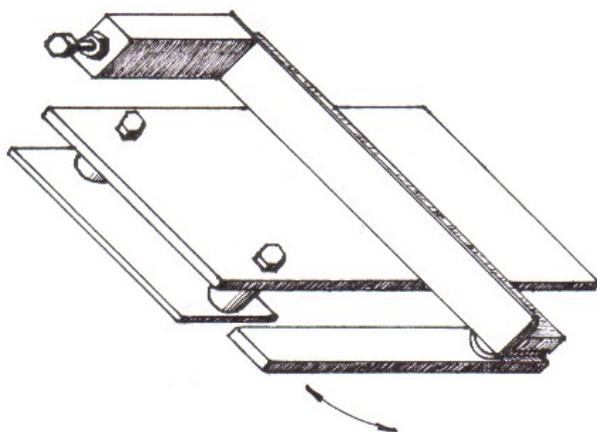
The crankpin of each free wheel was assembled in similar fashion. The crankpin of each axled wheel was pushed in using copious oil and a hydraulic press.

Next came the tricky part – quartering. Following discussion with other club members I attempted to make a quartering jig.

The jig comprised a laminated body of 6.4 mm thickness, 180 mm height and 116 mm width. It could have been made from solid plate, however I simply used available material on hand.

An angle iron beam was bolted (using 5/16” nuts & bolts) across the lower third of the body, extending 40-50 mm beyond. To one side a block of steel was bolted. To this a screw was fitted to the top – to act as the adjustable stop for the previously installed crankpin/wheel/axle set. A spacer and 5 mm thick plate was bolted vertically to the other end of the angle iron beam. This was to act as the stop plate to locate the position of the second wheel and crankpin as they were being installed. The stop plate was bolted and lock-nutted securely but was still able to be moved to its final quartering position after the second wheel was placed and loose on the axle, prior to cooling. Care was taken that no movement occurred along the axis of the bolt. No obvious bending of the stop plate resulted from reasonable application of effort.

The wheel and axle were supported on two steel pegs and a short vertical plate, forming a cradle. These were bolted to the upper body. Shims were inserted between the pegs



The jig with a wheelset, showing how it's used.
Photo: David Thomas

and short plate to hold the axle firmly and allow adjustment if necessary.

To set up the jig, the whole jig was held in a drill vice and the body checked to be vertical. The first wheel and its axle were fitted in the cradle and held by two small G-clamps. Next a scribing block was used to determine that the centre of the crankpin was in the horizontal plane with the axle centre. The adjusting screw was then turned against the crankpin, secured using a locknut and clamp and double-checked. This setting was subsequently used for all wheelsets.

As the driving crankpin was of greater diameter than the coupled crankpins, sleeves the same diameter as the driving pins were machined and fitted to the smaller diameter crankpins in the jig.

After initially attempting to install the second wheels using the jig I discovered that my limited heating facilities at home were inadequate. Boring out an original, half-entered axle, and manufacture and initial fitting of a new one followed.

Barry Tulloch then came to the rescue by providing a large bore burner that easily heated the wheels to the required heat. I am unsure of the “correct” heat needed, however the wheels were heated to about 670 degrees centigrade, as measured by a temperature crayon. This gave adequate time to place and turn the wheels with a **little** extra time, before they shrank and locked on the axles. Further heating was unnecessary, could lead to setting of the wheel at a slight angle on the axle and could potentially cause scaling of the machined parts.

As an inadvertent proponent of finding out the hard way,

I changed the method of holding the wheels part way through the installation process and subsequently found that the crank angles of two wheelsets were unacceptably different to the other. Holding the wheels outside their rims enabled too much pressure to be placed on the movable stop and allowed slight movement of the wheels on their axles. The third wheelset had been held within the wheel diameter, offering less leverage against the stop.

At this stage it was decided to strengthen the angle iron section of the jig by adding a 3/8" bar. It was also determined that the second method of holding the wheels would be used, so the first two axles were removed and new ones machined and fitted.

Subsequent heating, fitting and quartering went without a hitch. On checking the differences in quartering of the coupled wheels compared with the driving wheelset the measurements indicated the front wheelset was 0.02 mm different and the rear wheelset had nil difference – a satisfying result after much trial and error, and another set of lessons to add to the list.

All About Wheels

Warwick Allison

The recent motion at the AALS AGM to amend the wheel standards created some interest. The most interest was in the adjustment to the width of the 7¼ inch gauge flange. However there has also been some discussion on the important aspects of the wheel standards, so I thought it would be worthwhile to pen some notes on the history and engineering aspects.

7¼ inch Gauge Changes

When a wheel set is placed on a set of rails at the correct gauge, the wheels should have the point where the root radius meets the tread at the gauge face of the rail. This is a fairly fundamental aspect of the wheel configuration. In the case of the 7¼ inch gauge wheel standards, the gauge



This X class from AMSR Society took out the Bolton Trophy.

face of the rail was actually well within the root radius. The main dimensions are a back to back of 170mm, a 6mm flange and a 3mm root radius. Hence the track gauge related to the wheel set is $170+6+3+6+3 = 188$, this being nearly 4mm wide of gauge which should be 184.15mm. This means that unless a very generous rail-head radius is provided, the wheel set would be sitting up high and would be unstable on the track. This problem was the subject of an article in AME Issue 110 by Henry Pattenden who was responding to correspondence in AME regarding wheel issues. However he focussed on a solution of rail head radius, rather than twigging that the problem was an overgauge wheel set! Most 7¼ inch railways employ a generous gauge widening, and this together with the fact that most wheel flanges would not be the full 6mm thick (and most would be worn) they tend to get away with it. (I suspect that wheel wear is very heavy because of this mismatch, this leading to the claim that they need a thick flange to get a reasonable wheel life. If it were correct in the first place, wear would be a lot less!). However, from discussions it is apparent that some clubs are having trouble, and hence it was considered best to adjust the Code so that the correct dimensions are shown. However the 3mm flange root radius is also very generous. Strictly speaking the problem could be resolved by adopting a root radius and flange thickness that added to 7.2mm. Hence a 6mm flange could be married to a 1.2mm root radius (a bit small I think), or alternatively a 5mm flange to a 2.2mm root radius (which seems OK to me).

I am sure that further discussion will occur during the year to come to keep people happy, however at least now the standard will work.

The cab of the SAR prize winning X class.



Diary

5 June	Annual General Meeting
9-11 June	Hot Pot Illawarra Live Steamers
16 June	Public Running Day
30 June	Interclub Visit at SLSLS
3 July	Directors Meeting
21 July	Public Running Day
7 August	Members Meeting
18 August	Public Running Day and Next Newsletter



This loco was giving rides at the Adelaide Railway Museum. It was built by Museum supporters.

5 inch gauge wheel standards

The genesis of our 5 inch gauge wheel standards came with Ted Herbert's 5 inch gauge ground level track at Luddenham. The cast iron wheels then in vogue were a bit weak at the then ME flange thickness of about 1/8 inch. They now needed to cope with ground level derailments with 4 or 5 adult passengers riding on a set of bogies. If the flange was beefed up, then other wheel dimensions would also need to be decided upon. Consequently the current 5 inch gauge wheel standards with the 5/32" flange and the 4 9/16 inch back to back came into effect. They were first documented by Bill Richards, and the original 'official' drawing by Stan Childs is available on the SLSLS web site. Once a standard was decided it made sense for it to be universally applied, and hence locomotives were built to the standards, because for any specific set of track dimensions, there is really only one wheel dimensions set that it fits. However, fine scale wheels will still operate through pointwork, as the increased back to back is exactly compensated for by the thinner flange.

The Important Bits about Wheels.

Now a wheel profile is a strange thing. Most of the points at which one can measure the wheel flange thickness are

David Thomas and the SLSLS V class & train at Penfield during the convention.



machined away in the manufacturing process! Some of the things are important, but others less so. By far the most important aspect is the wheel root radius at the flange. In fact, the main purpose of the flange is to support the root radius, so the flange itself is less important if it does this job well. The root radius needs to be generous, hence the 1.8mm radius in the code.

Getting the flange thickness correct can be done by adopting the following process to machine the wheels. Using a tool already ground with the correct root radius machine the wheel tread down to size, leaving the flange the required 5/32inch thickness. You can now lay the compound slide over to place on the tread taper and the flange taper. These tapers will be machined so they are tangent to the root radius. If you sketch this out you will see that they actually machine away the point where the wheel diameter was measured, and where the flange thickness

was measured. However, these differences are extremely small, and one should not get too excited about it!

As a wheelset goes into a curve, the wheel rides up onto the root radius and the wheel set is thereby steered around the curve. As the axles are not radial, they take a somewhat zig zag course as they slip and slide there way around the curve.

The wheel taper is 1.5 to 2 degrees. Now the purpose of this taper is to get the wheel set to self centre on the rails. However, too much taper is a bad thing, as it causes the wheels to hunt. Also, as our rails are effectively rectangular bar, the tops should be fairly flat, and the taper gets the wheelsets rolling on the inner tops of the rails. To minimise wear and spread the loads a parallel tread would be good, but as this would not self centre, we need some taper. As time goes by the rails will take the shape of the wheel treads, so we don't want too much taper, as this will make the deformation worse. Also, if the rails are significantly tapered wheelsets with less tapers will then be running on the outside edge of the rail and the root radius won't be able to do its job in steering the wheelset around curves.

Another point is that as a wheel transfers between the wing rail and the running rail at a crossing (or frog) the wheel contact changes from one side to the other as it traverses this area. As it leaves the crossing nose it is near the flange side of the wheel, but it picks up the wing rail on the outer side of the wheel. If the wheel is heavily tapered then it will fall and rise more than one with a smaller taper. This will result in pounding and over time the points will deteriorate at the crossing nose, and wing rail.

The flange also needs to be tapered back and the 12 -20 degrees indicates that we really don't want the flange to contact the rail at all. If (say) the rail has laid over (ie the top is outside the lower

part), then there is a risk that the flange will contact the inside of the rail. This will create a force that will attempt to lift the flange and creates a derailment risk. Apart from this, there is nothing magical about the taper on the face of the flange, so square flanges are highly undesirable.

Flange depth is a moot point. They only need to be deep enough to support the root radius. They certainly don't want to be deep enough to contact fishplates. Hence making them smaller than the specified depth (which should be read as a maximum) is quite OK. I will not say anything about turnouts that require wheels to run on the flanges, except - avoid them!

To finish off, the back of the flange needs to be tapered to assist it to be led into checkrails, (but not to full flange depth! or you will be reducing the back to back), and the flange itself needs to be well rounded to finish it, although this is not dimensionally critical.

One nice point about the 5 inch gauge standards is that if you use 3/8 inch or 10mm rail, then with a 5/8 inch wheel, the face of the wheel does not come over the top of the rail, when curving. This means that any oil on the wheel face will be slung off down the outside of the rail, rather than onto the railhead. However if you use gauge widening, you will be losing this benefit somewhat. Similarly if you use thinner wheels or wider rails.

Hopefully this puts things into perspective. Wheel dimensions are not really a personal thing, they are a part of an integrated system of track and train that need to match to get the best results.

Getting Around Sharp Curves.

Sharp curves are generally endemic on miniature railways. And sharp curves and long wheelbase engines don't mix easily, so something needs to adjust to accommodate them. Side play on loco axles within the fixed wheelbase isn't a good thing, as it chops out the coupling rod bushes pretty quick. With our wheel standards we can thin the flanges on the intermediate axles which will help a bit.

The main problem though is that the curve is much sharper than scale, so it makes sense that the compensation needs to be on the track rather than the locomotive. The solution is gauge widening, and this can be usefully applied on curves to permit quite large fixed wheelbase locos to successfully negotiate them. Gauge widening of 1/16 inch is ample and should solve most problems.

However, like most things, you can have too much of a good thing. When a loco is powering around a curve, it skews with the front outside flange and rear inside flange contacting their respective rails (see



**No convention report is complete without a view of the massed locos!
This is only the 5 inch and small 7¼ inch gauge area.**

AME No. 125.) This results in a leading bogie or pony truck having an increased angularity with the loco chassis, and is accentuated by gauge widening. Sometimes this can be beyond the designed offset, with the result of binding and potential derailment. Excessive gauge widening also results in problems at points and checkrails, so don't overdo it.

2007 Convention Report Warwick Allison

This year the convention was in Adelaide, hosted by the Penfield Society at Salisbury. Adelaide put on its best weather for the occasion while Sydney was drenched with a weekend of Easter storms.

Everyone knew it was on, even the fruit fly inspectors at

Barry Webster's (HME) detailed 81 class controls. Barry won the Aradlay-Triton trophy for the best first attempt.





A pair of Western Australian not-quite,-but-certainly-look-like-the-prototype locos in 7¼ inch gauge. They certainly went well.

the border who, when they asked ‘what was in the trailer’ and I said ‘trains’ responded ‘not another one’ and lost all interest immediately! They didn’t even search my brand new apricot’s van.

There was a good roll up at the Thursday evening welcome and the Saturday had over 500 registrations making it one of the most popular times at recent conventions.

Penfield have an extensive ground level 5 and 7¼ inch dual gauge railway with a boat pond and clubhouse area and with the track surrounding this at one end of a figure 8 arrangement. There was also a gauge 1 layout which ran battery powered and steam powered trains.

I drove in on Friday morning and was able to unload straight away. It was clearly good luck because there was a queue the rest of the morning. There was a large selection of battery and diesel locomotives as well as a number of large 7¼ inch gauge from Western Australia. These were prototype based engines, and they were well built and ran well too!

SLSLS members present apart from Andrew and myself

included David Thomas (who got around using public transport and lifts), David Lee & Zac with his GM diesel, and Max Gay (who travelled with the Illawarra crowd to keep them out of trouble).

John Hagan was also there, this time with a brand new Duchess Pacific, complete with smoke deflectors and maroon livery. It was the flashiest engine present and attracted all the expatriate Poms who drooled over it remembering the good old times! Bob Brown (NDMES, Perth) gave a talk on boilers and this was well attended.

On the Friday night there was a boiler inspectors meeting followed by a safety meeting which largely discussed the issue of the 7¼ inch gauge wheel profile, raised as a result of a motion by us. Unfortunately it was not well attended, but I managed to convince them that what was proposed was better than what the code currently had, so our motion proceeded to the vote at the AGM on Saturday night.

Saturday was the official opening by the Deputy Mayor of Salisbury and the official train and grand parade. There were plenty of trains taking part, it seemed to take ages for them all to pass.

The AGM was largely procedural. The only two technical motions were the SLSLS ones on wheel standards and air hose fittings. There were a couple of questions on the wheel standards, but the vote was comfortably carried. There was less controversy on the air hose fittings! Interestingly, but perhaps not surprisingly, there was not a mention of the 5 inch gauge tidy ups! Subsequent to the meeting it appears that a group will investigate the 7¼ inch wheel standards thoroughly, as some alternative proposals were raised including one for a 5mm flange, some for retention of a 6mm flange, and one for a

‘metrication’ that made the gauge a rounded 185mm. Certainly from what I saw and from people I spoke to, two things were obvious. One was that there was a significant number of people who were glad the matter has been brought to a head, as the problem had existed for so long without anyone doing anything about it, and secondly, the lack of understanding of the engineering involved in the wheel to rail interface.

The meeting finished with a spiel from David Giles, telling us what was happening across the Tasman in the “Shakey Isles”, and we picked up a leaflet on next years convention in Cobden, Victoria.

The Sunday night was presentation night- “The Bogies”. The Bolton Trophy went to a very nice 5 inch gauge South Australian Railways X class 2-6-0 built by Bob Williams from Railway Park. The Most Popular went to a battery tram by John Andrews from QSMEE for his model of a

This 5 inch Queensland tram by John Andrews (QSMEE) was a lovely job. This won the Most Popular loco award. It was a battery electric and was operated from the actual tram drivers control stand.



Queensland 4 wheel tram. This was remarkable for its short wheelbase and long overall length, and throwover toast rack seats – very finely done. The actual tram controller was the one used to make it work! Barry Webster from HME won the Aradlay-Triton trophy for his 81 class diesel – a lovely job. Gerald Cox from Roseworthy won the Tullamarine trophy for his Clayton’s Steam Wagon. The AME Under 25s encouragement award went to Chris Eagles (WDLs) for his Blowfly wheelset, and the Southern Federation Trophy went to Murray Hill for his services to the hobby.

By Monday the track was fairly slippery, and we were all having trouble climbing the grades. The photos will describe the scenes far better than words. Everyone had a good time, and it was certainly one of the consistently good times, every day!

Post Convention Runs.

One of the highlights of Conventions is the post convention runs, and in many ways, these are much more friendly than the convention itself. There is a lot more sharing of locos and the pace is reduced as there are more manageable numbers. The Tuesday was held at SASMEE at Millwood. They have a very constrained space and they have developed a fantastic facility inside the railway triangle. You watch the suburban railcars and the standard gauge freight go past! A boat pond and stationary engine shed are included as well. They have recently re-laid their track which is two railways, one 3½ inch and 5 inch dual gauge and the other being 5 and 7¼ inch dual gauge. The track is slotted sleepers with pressed in steel rail. The track appears to be ballasted with crushed dolomite, which have set to be a very firm foundation. This is apparently the fine screenings byproduct from crushing rock for ballast. In some ways it would be similar to our roadbase. It compacts very well, and stays put. The track is very well laid with a good top and line and gives an excellent ride. The layout is fully signalled with track circuits which provide for absolute block working in critical areas, such as when visibility is restricted or through the tunnel. They have an unloader that has striking similarities to ours, and this is fitted with a solar panel to keep the battery topped up. They were very friendly indeed, helping us with the unloading and providing us with a nice lunch. There was a fair bit of loco changing going on, and talk, and it was obvious that everyone had a great time.

The Wednesday had two venues, one at Roseworthy miniature railway which is within the grounds of Adelaide University’s facility at Roseworthy (near Gawler), and the other at Morphett Vale south of Adelaide. As we were staying at Gawler, we started with Roseworthy. They have a 7¼ inch gauge only railway in a lovely rural setting. The university uses recycled water from its dairy and other facilities to water the grass, and very green it is too! Morphett Vale was a big draw card and when we arrived at nearly 10am, we were the first conventioners. We were treated like royalty, offered tea, coffee and



Hugh Elsol (QSMEE member & AALS Secretary) driving Bob Smith’s SAR loco at SASMEE during the post convention run.

cake, and had a good yarn with the friendly lot of members present. They have about 17 members. The railway is basically two balloon loops with a single track line between with a couple of passing loops. It looks a lot of fun with more than one train. The track is flat bar with flat bar sleepers screwed to plastic sleepers (like ours). They have a public night run on certain Saturday evenings in the summer, which seems a good idea, as it would fit in well with the lifestyle of the area. The secret they shared was that Kitty Litter (the paper based one) is ideal lighting up material. It comes cheaply in big bags. Put some in a jar and soak in your favourite inflammable, kero, turps etc. Put some on your shovel and light, then put it into the firebox, previously loaded with non soaked wood. Much cheaper and effective than firelighters.

To get to Morphett Vale we then had to drive through Adelaide from north to south. There is (as far as I am aware) only one road that goes straight through, and of course, everyone uses it! It is mostly 2 lanes each way, but lots of intersections, railway level crossings and a tram crossing. It is impossible to cross the traffic flow (as I tried), and one needs to know where the traffic lights

Allan Wallace with a 3½ inch gauge Juliet, at SASMEE.





The station at the Morphett Vale Railway.

are. Maybe I am biased (or misinformed), but I would say the traffic is worse than Sydney, given the space it has to move in. Morphett Vale is well south of the city (in Adelaide terms) in a newish and growing area. The



The signal panel at Morphett Vale. The control desk follows full size relay interlocking practice.

railway is again 7¼ inch gauge only and is located in a very large park. The park has other facilities such as archery, dog training, basketball and the like and is clearly a community facility of great value. The railway is extremely well laid. The rails are flat bar welded into a T section, and screwed to 75mm by 75mm plastic sleepers. The track is laid onto and then in dolomite. There is no ballast as such. Points are EP operated. The newer ones have heel-less switches, and joggled stock rails, very well made and the whole track is smooth and a delight to travel on. Signals are to the South Australian speed signalling indications. A lot of the track is track circuited, and very well it works too! The signals return to stop as the train passes, and points cannot be moved under the train. The signalling is controlled from the signal box which has a relay interlocking panel using rotary switches and an indicator diagram that shows point position, and track occupancy. Not all track circuits are indi-

cated, as the system is being continuously improved upon.

A remote junction is operated by a wireless link. This has a one shot call, and once set the train has to pass through to free it up again. This avoids the system being 'played' with when a train is approaching. This remote junction has a solar panel to trickle charge a battery to avoid having to lay a lot of cabling.

All in all a very impressive setup, and well worth a visit.

Thursday was a late start at Railway Park. A select but worthwhile number of conventioners turned up for a run, and some arrived before the gates were open. However there was an efficient use of the unloading facilities and it didn't take long for steam to be raised and for all of us to be out on the track. After getting to know the track, we all stabled for a BBQ lunch supplied by the Society, which was very welcome. Railway Park (the Adelaide Miniature Steam Railway Society) is a 5 inch gauge ground level railway located between backyards similar to SLSLS. It is a lesson on what can be done in a small space and the track is smooth and well laid. Track construction is similar to SLSLS, although sleepers are timber.

It is interesting to note that both Railway Park and SAS-MEE only place fishplates on the outside of the rails (i.e. a single one on each joint) so that unduly deep flanges don't have to bump along. It is clear this doesn't support the rails as well.

They have a very novel unloading arrangement with a counterbalanced arm that can move up and down and sideways to a small extent, sufficient to line up a trailer. It is very easy to operate, but of, course only suitable for one car at a time, although there are two of them on opposite sides of the turntable. They also have a number of trackside structures that certainly makes it more interesting for the public.

In their clubhouse they have a wall display of colour pictures of their club locos, and a very impressive display it is too! The post convention group have a much better relationship than what can be created over the four days of the convention, and all too soon it was over. We packed

The sector shed under construction at Railway Park.





The Cornish Beam enginehouse and winding enginehouse at Burra. (No engines! But well worth a look.)

up, said our goodbyes and went on our way until next year, when the convention will be at Cobden, and the post convention runs will be at Victorian Societies.

On Friday I made my way to Clare. Passing through Nurioopta there was a slight pause as we inspected the RX in the park, then onto Kapunda with another RX in a park. The Kapunda RX is a credit to the local authorities. It is well kept and very well integrated into the children's playground. They also have a wig wag signal. Kapunda's place in history is the first of the 1840's copper mines that featured Cornish beam engines. Unfortunately only the stone foundations remain, the engine house being dismantled for its stone as late as the 1950s. I arrived at Clare late but two conventioners had run there that day. The track is quite long, all 7¼ inch gauge only, and is in a large park that is adjacent to a large lake. It is a very nice setting. The track was aluminium profile rail, but has been largely replaced with steel flat bar welded to steel sleepers and attached to wood or plastic sleepers. Again the dolomite is used for formation and ballast. The line crosses a depression (creek or water course would be implying too much!) on an ex army Bailey bridge which has been fitted with a grid mesh deck. Another bridge brings it back. This has been welded up on the back of a trailer unit, and it certainly looks the part. There is a nice station building that incorporates the signal panel. Extensions to the already long track are in hand. The track has a few dips and twists, but a lot of potential.

The next day we spent in Burra. This is a largely historic town based around the copper mining that took place in the mid to late 1800s. One of the Cornish beam engine engine houses has been extensively restored (except for the actual engine) and is well worth a look. There is a large amount of steel bits around which can be identified as parts of the pump rod strapping, pump clack box and water inlet. These parts are substantial in size, and give some

idea of the weight of the components used in these installations. The mine was under way before 1850, with the mining being by shaft and tunnels. The beam engines were installed once mining went below the water table, their primary role to pump out the seepage which drained into a sump at the bottom of the main shaft. The water was stored in a small dam that then operated some water wheels on its way to discharge in the river. In the 1860s some open cut mining was undertaken. Much more lately (1960) some mechanised open cut mining took place that unfortunately changed the shape of the mine significantly.

The whole town is worth a full day. Various miners cottages, the goal, courthouse, dugouts, mine buildings are available for inspection, and the original structures are well preserved and are worth a look. As well the predominance of South Australian brick and stone architecture makes it a remarkable place.

The railway hasn't been used for some years (probably about 20). It is broad gauge, and the station exists but is in need of some TLC. Its architecture is unique and worth a look. Various pieces of signalling apparatus, water columns, and trackwork also still exist. Hopefully the local authorities will value it and provide some wherewithal for its restoration, despite the fact that the railway arrived after the mining boom.

Today some mining still occurs, although it seems much less obtrusive. One sign I read stated that Burra is the worlds largest producer of copper oxide (whatever that means!)

Next day a short visit to Cobdogla in the South Australian Riverlands got us a ride on their 2 ft gauge railway. They run for 2 hours on Sunday afternoons, but steam is reserved for special occasions. It is an interesting trip with haulage by a PM Simplex loco. They have a very nice Bagnall set up for oil firing, which spent the afternoon in the engine shed. Also in the museum is a huge Fowler single cylinder traction engine, and the famous Humphrey pump. One day I'll be there on an operating day!

Burra Railway Station. Once the arched station roof had another arch over the tracks!





Above: Big trains need lots of locos. John Lyons 1915 leads John Hurst with Nigel Gresley and bringing up the rear behind guard John Hurst snr is David Thomas and the B10.
 Right: David Lee's brand new GM9 during trials.
 Below: By far the most colourful loco at the convention was John Hagan's new 7 1/2 inch gauge "Duchess" loco City of Nottingham, complete with 4 working cylinders! Behind is a very happy John and Bruce Hagan.

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 To ride on the trains, enclosed footwear must be worn.