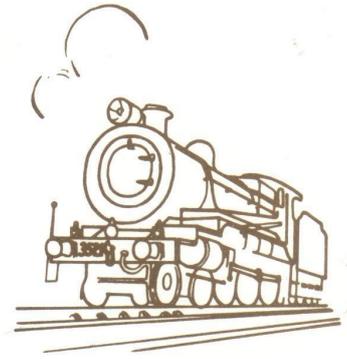


Sydney Live Steam Locomotive Society

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

'Newsletter'

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Tony Eyre has relieved Matt Lee on 3506 during the October Running Day.
Mark Gibbons as Guard and Barry Millner as stationmaster look on.

Running Day Reports August 2008 Running Day Report.

This was our last winter running day for the year, the morning started off with sunshine but true to forecast there were some clouds rolling in as we started running. It did not rain even though the clouds thickened. Late into the afternoon with blue sky on the western horizon we were treated to some strange light conditions as the

sun streamed in under the clouds. There was a queue when the gates opened but this was soon cleared. Our visitors then drifted in till about 3.00pm. when there was another influx of patrons. There were two party groups that stood out from the rest. They were both at the bottom end of the ground. One group had about one dozen plastic chairs, with a trolley to carry them on, set out like an amphitheatre. The second group had a "green" theme. There was a "Kermit" green tablecloth, seat covers and green balloons all around their area, it did stand out.



David Thomas boiler tests Pansy for Jim Mullholland on the August running day.

On the elevated track John Hurst ran a five car train behind his "Nigel Gresley" 2-8-0, David Thomas ran the 2-6-0 B10 as attached banker. Arthur Hurst, John's brother acted as guard on this train. David is now an officially accredited Boiler Inspector and was hard at inspecting before he was able to raise steam. Ray Lee's C3803 was steam tested and Jim Mullholland's 0-6-0, pannier tank had a hydro and steam test. Jim Leishman had the Ps4 with three cars but retired early with injector problems. Jim Mullholland hauled one car with the pannier while I also ran one car with Z1915. I was able to enjoy a long run starting at 1.30pm. and returning to loco after 4.35pm. Gary Buttell had his 3½" C36 class in steam again after it had undergone some remedial work, Gary ran light engine and was last one off the track at dusk.

On the inner ground level Warwick Allison had V1224 at the head of one train while the second was double headed with Matt Lee on C3506 leading Henry Spencer, TGR 4-6-2 R class. Max Gay shared the driving with Henry. The outer main was catered for by "Mountaineer" 2-6-2

ground level station. As the temperature dropped with the heavier cloud many visitors headed for home.

We were a little short of members, but with the help of some visiting enthusiasts, we managed to find enough guards for all trains, even if all the stations were not fully staffed.

Mark Gibbons reported a couple of signal quirks, however they self rectified and caused no real problems.

Mick Murray issued the new Operations Guide to all present. This is a single sheet both sides in colour and was well received.

September 2008 Running Day Report.

This was our first run for Springtime and one would have expected a nice pleasant day. Instead we had the hottest day so far for 2008. There was a big crowd, they just seemed to keep coming in all afternoon and then hung about, as the day was so good. All the shaded areas were well sort after. We seemed to have a lot of new visitors,

there were a lot of un-protected toes to be seen. There was one un-ruly little group riding on the ground level that had invented a new way to cause a dangerous situation. It is simple, you take off your baseball cap and see if you can scoop up ballast with it.

We were fortunate to have Ross Bishop with us for the afternoon driving his "Fowler" 0-6-2 cane loco "Toneya". Ross was first out on the inner and ran for most of the afternoon returning to loco for an early departure. V1224 was at the head of the second train with Warwick Allison driving. The Mullholland 4-

The Green Machine under control of Dom Mulholland on the September running day.



8-2 "Green Machine" 3901 ran on the outer with Jim and Dominic sharing the driving. The second train on this track was "Mountaineer" 2-6-2 with Martin Yule and Barry Tulloch sharing the driving.

We had a good variety of locomotives on the elevated. Jim Lieshman ran the "ten wheeler" hauling four cars. David Thomas was attached banker with the 2-6-0 B10, they ran for most of the afternoon. When David came off Jim carried on till a problem with the regulator forced him to call it a day. Greg Croudace steamed the 4-8-2 3½" tank loco and gave some instructions to its new

owner who had a few laps till mid afternoon then packed it up for its new home. Garry Butel ran his 36 class light engine for the afternoon. Brian Carter was up from the southern highlands with 0-4-0 "Perseverance". He coupled up to three cars and then double headed with myself and Z1915, 0-6-0. We had a very enjoyable afternoon retiring at about 4.30pm. Paul Taffa had the "Hunslet" back and running, it had been out of action since July last year. After a steam test Paul ran a two car train and was the last one off the elevated. He was very happy at the end of the run.

We had some points trouble. Mark Gibbons was busy adjusting motor cut offs. We suspect the problem was free running due to the oil and hot weather. We also had trouble with 19 points due to a micro switch permanently stuck in. Fortunately we could clip it out of use and ignore it!

Henry and Brian Kilgour started the day with the delivery of "The Old Girl". This was displayed in loco. Barry Millner and Warwick did some signalling work, which included patching the signal box diagram and painting a white lever red! Warwick also painted a white arrow on the only signal we have that is mounted on the wrong side of the track at the new carriage shed.

The total result was 2158 rides, almost spot on a September average, although we have in the past had some much bigger days. It was good to see Sue Carter in the Kiosk helping Liz, Di and Joy. They had a busy day.

October 2008 Running Day Report.

After the very hot September running day it was good to have a more reasonable day. There was some early cloud but this cleared and we had a light breeze. There are other attractions in the area on this weekend, the annual Granny Smith festival is on so



1915 and John Lyons leads Brian Carter and Perseverance on an elevated train.

our patronage is often a bit slow. Wayne Fletcher was on the gate and while very busy at sometimes he was able to spend plenty of time watching the trains go round. There were a couple of very big party groups well set up in the shady areas of the grounds. Brian Hurst, ticket seller, in Vernon's absence sold \$100.00 worth of tickets in one go. In all we had a very enjoyable day, the ride tally was 1815, which was 100 above the October average.

Warwick was out early with V1224 on the inner, Henry Spencer rode the guards van. The train ran till the end of the day. The second train on the inner was "Mountaineer" with the driving shared by Barry Tulloch, Martin Yule and Peter Dunn. The "Mountaineer" had a brake problem late in the day but otherwise ran in a satisfactory manner. On the outer Matt Lee ran the C3506, 4-6-0 on one train, Tony Eyre had a lengthy spell at the regulator of the 35 class. Jim and Dominic Mulholland steamed the "Green Machine" 4-8-2 and shared the driving for the afternoon. Jim had opened up the blast pipe nozzle. It sounded very good.

The B 10 and David Thomas with a single car on the October running day.





A good role up for morning tea on the September gardening day.

The elevated track had four trains. The three-car train was hauled by Jim Leishman's ten wheeler. Arthur Hurst was undergoing driver training with Jim and had a good run during the afternoon. Paul Taffa coupled up two cars behind the Hunslet and ran all afternoon to be the last train running on the elevated. David Thomas ran one car behind the 2-6-0 B10 and I took one car with Z1915. My initial car, No. 5 caused problems with the footboards rubbing on the anti-tipping rails. This car was set aside and a new one taken out of the shed. I enjoyed a good run, one load of note was two adults and three children stood out, the two adults were very large gentlemen. It was a challenge on the way up the grade to keep the wheels under control and not slip.

these are \$3 each.

Loco and Rolling Stock News

Brian Muston showed us his latest vehicle, a mortuary carriage. It seems the coffins are still to come! Jim Leishman showed us his Britannia tender.

David also looked at Ray Lee's Victorian A2 boiler components and performed a hydrostatic test on Paul's Hunslet. Max Gay has been reworking Henry's R class axles and axle boxes. Barry Tulloch has shown us the new bogie for Eunice (the old wheels had the wrong number of spokes). Zac Lee and David showed us their latest acquisition, a partly built Tich! Nathan has also dropped in to show us a steel boiler he has for a 7¼ inch gauge loco he

and friends want to restore. Garry Buttel has acquired a very nice B1. We hope to see this going very soon.

Brian Muston's coffin van. The doors open too.



Boiler Codes

A new supply of boiler codes has been received. These are now \$22 each.

Members News

Barry Millner spent his birthday at the grounds! He did some weeding and helped us with the digging and forming up for concreting. What better way to have a birthday! John Tulloch and John Hurst are both on the mend after some mishaps. I hope both of you are fully recovered soon.

Boiler Inspectors

Welcome news is that David Thomas has been accepted as a boiler inspector by the AMBSC. David is regularly at the grounds so hopefully we can keep our boilers in

About 4.30pm. the crowd started to move off. With Di & Ray away in the mother country Chris Hurst helped out in the kiosk.

What's Doing!

60th Anniversary Book

David and Jonathon Thomas are to be congratulated for their effort in putting this publication together.

They have put together a nice little booklet to celebrate our 60th anniversary. Warwick put it into a pdf format and I took it off to our printer. It is amazing what can be done with digital technology. Its also a great book for sale to the public as it gives a behind the scenes view of what we do. Cost is \$6 posted price, or \$5 from the grounds. If members want more copies,

ticket now with less fuss. It is probably appropriate to remind members that boiler inspectors are neither testers nor policemen. They give their time for the benefit of members. Boilers presented for testing should be pre-tested by the owners and any defects made good. It is not the inspector's job to fix leaks, nor to have to tolerate excessive leaks. Boilers should be clean including inside the firebox and smokebox and reasonable access for inspection should be provided. Help them to help you!



01/11/2008

Members hard at screeding as the truck has just finished pouring as the path reaches the BBQ.

New Rules

The new rules have been the subject of much debate. John Hurst has been in regular contact with the Coop people in Bathurst, and I don't think this is something we could wish on anyone! Thanks John. The members adopted the new rules at the October members meeting in a Special Resolution. Once approved formally by the Registrar these will convert us to a non-share Co-operative. There will be some changes, which have been explained previously to members. Copies of the rules are in the clubhouse.

Neil Campbell.

Last issue, I failed to acknowledge the assistance of Barry Glover in formulating the words for Neil in the last Newsletter. Sorry Barry! (John Lyons.)

The Old Girl

A strategy and plan of management for the care and use of the Old Girl has been formulated. It was accepted by the members at the October members meeting.

On Sunday the 26 October members Barry Tulloch, David Thomas, Andrew Allison and your President commenced the first part of the plan.

We started at 10am and had to purchase a socket to get the safety valves out. This was then turned down a bit by David and after that it managed to fit inside the lagging holes quite well. The threads were 5/8 x 26 which just happened to be V class safety valve size, so Warwick had some plugs.

The initial squeeze showed the whistle valve to be leaky and the steam gauge pipe had cracked. We removed the whistle valve and plugged it and also the steam pressure gauge pipe and plugged that too. The cab roof was removed to do this. There was still a few weeps but much better now and it managed

to get through the hydrostatic test. The boiler is in fact very good. Water that accumulated in the smokebox (because we omitted to close the blower valve) leaked out the bottom, so we used some silicon and spread a bit around the exhaust pipe.

Barry whipped home and annealed and repaired the pressure gauge pipe. This was reinstalled in a better position, as the pipe previously was intertwined around some others. The cab roof was then re-installed.

A coupling pin was made with an R clip hole, and reinstalled to replace the unsuitably short coach screw, which appears to have been a spot fix. This is difficult to get in and out, so regular uncoupling of the tender is not recommended. We renewed the engine to tender hoses.

At 3pm, the fire was lit using the Vs blower. We need to make a special one just for this loco. The petticoat is very small and its hard to keep the jet straight up the chimney.

David , Barry and Andrew removing the cab roof of the Old Girl for remedial work on the plumbing.



26/10/2008



Our first concrete pour in the middle of the grounds was well attended by members. Here is Lionel supervising operations. Below: Even the ducks prefer a concrete path!



About 30 minutes later we had steam, and the accumulation test was most satisfactory with all 3 safety valves giving a good blast. The pressure gauge reads high, so it blows off slightly above the red line.

We suspect the safety valves are still set a bit low.

After this test all ancillaries were tested, including the 2 injectors, the steam pump, vacuum ejector and drains. All worked first time! The injectors are a dream. The vacuum ejector is very weak (only about 7 or 8 on the gauge). We suspect this is because the exhaust is fed through a small pipe with a right angle bend in it. With a 6 car empty train, it took some distance to stop. The lubricators worked fine, although quite thirsty on oil.

The test drive was most satisfactory also. Plenty of noise, & stirring to hear! For over an hour we all had a go and as well we pulled all the goods wagons. Very nice. The long water gauges and square fire hole make it easy to control water and to fire.

Mechanically, rods need rebushing, the crossheads need attention and the axle boxes slop in the horns, although the axles themselves seem OK. The beats are off, but far worse in reverse when it becomes very slippery as well. The tender is internally very rusty. It appears to be 10g plate, and it is repairable, but access is difficult. For longevity it seems we will need to remove some of the tank plates (may have to drill out the screws) so that permanent access can be had to remove all the rust and paint it. There is an alternate plan to electrolytically dissolve the rust.

It is difficult to get the grate out. We shovelled the fire out, or pushed it through. The firebar gaps are enormous! It is not possible to drop the grate. There is a plate beneath the ashpan which can be withdrawn sideways to facilitate ash removal.

The seat was lowered to improve the driving position by removing a block of wood.

Barry has volunteered to fix up the motion. Warwick will make a few gizmos to assist operation, like a blower.

In following our process, the next stage is we will operate it on the Christmas party day from (say) mid afternoon. This will give members a chance to experience it in steam.

The opportunity was taken to rearrange the carriage sheds. One car has been added to the green set on the inner main. This is the lead car (to make it easy to drop off) so both inner sets are now effectively 8 long. A guards van was also swapped, so both inner sets have the longer vans. The Central West set has now been fitted with the shorter van, so it now fits into an outer carriage shed road completely. This is in No.2 road. The blue set is in No. 1 road. This needs the guards van from No.3 road. No. 3 road has all the spare cars and service vehicles in it. All the goods vans are now in 4 road (except 2 which are still in the clubhouse) plus the Old Girl. On running days, these may be pulled out for display. They are a heavy pull! They have 3 link chain couplings.

John Hurst has catalogued the books and a tidy up the clubhouse is in order. There are 2 unfinished wagons. There are un-machined cast iron wheels that are suitable for the wagons. The only parts needed are axles and axle boxes. One of the signals has a broken post which prevents it being mounted. In due course I am sure we can see to that.

Thanks to David, Andrew and Barry for giving up their Sunday to help!

The only donated items that the Society has decided to dispose of is 4 loco wheel castings. They are 142mm diameter and have 20 spokes. We are keen that these go to a member who is bona fide going to use them with a current project. Please tell Warwick if you are interested (with details), before the end of November, so the Directors can make a decision.

Garden Roster

December. J.Hurst, J.Leishman, J.Lyons, B.Rawlinson, M.Tyson, M.Yule, D.Mulholland, J.Mulholland.
January. B.Hurst, T.Eyre, M.Lee, R.Lee, R.Smithers, P.Taffa, B.Tulloch, J.Tulloch.
February. H.Spencer, A.Allison, M.Gibbons, W.Fletcher, M.Gay, G.Kirkby, B.Muston, J.Noller.
March. W.Allison, N.Amy, S.Collier, G.Buttel, B.Millner, M.Murray, S.Murray.

Gate Roster

December. Mark Gibbons. January. John Hurst. February. Brian Hurst. March. Stuart Larkin,

Works Reports

Concrete Paths

With completion of the paths at the top of the grounds, Bill is now able to drive down to the clubhouse along the new right of way. A reminder is that this is only for disabled access. All others are to park at the top of the grounds, or outside, as excessive traffic will ruin the grass and leave ruts. This access will not be available on running days.

Work has progressed on finally providing some concrete paths through the grounds. Now that the ground level crossing has been completed, work has continued to extend the path up to the elevated station. The path is laid on top of the concrete drain top. This means that we will be rid of the tapered edge where the dirt cannot grow grass, and it becomes muddy and slippery in the wet.

The new path edge will be deep enough to be able to support decent grass growth. The charge is being led by Lionel and John Lyons, and more recently with Arthur Hurst providing valuable assistance.

The path between the ground level and elevated station is now complete. By the time you are reading this Newsletter the path from the southern end will have reached the BBQ. As usual rain has threatened each pour. Thoughts are already in hand to tidy up the concrete at the elevated station. This needs some investigation of footboard clearances before proceeding.

To finish off the level crossing some very nice level crossing gates have been designed in the NSWGR style. Barry Tulloch has ordered material and we should soon see some construction.

Barry Tulloch fitted some door guttering to the new carriage shed. This should prevent any water seeping down the wall and into the shed.

Ground Improvements

Mark, Barry and Andrew attended to the loose fence panel behind the signal box. This was flapping in the breeze and a concerted effort had the panel dismantled and the while lot reassembled and re-screwed together. It now looks much better!

David and Andrew did some work resurrecting the leaf bin at the bottom of the ground. One bin was removed as

being surplus now we place most of the rakings directly on the garden, or mulch them straightaway. The other had some booker rod added to hold the pine logs together. Additionally the spare pine logs have been relocated as a garden edge to the lower end of the grounds. These will provide a mower edge and look quite good. Certainly a good recycling exercise!

Brian Hurst has restored the rusted signal foundation on No7 signal.

Ground Level Railway

Two areas of track were attended too, one near the diamond crossing on the outer main and the other at 19 points on the inner main to restore the levels and remove some holes in the road. How ever these have sunk again and more attention will be needed at the foundation level. Brian Rawlinson and Warwick cut and drilled 150 sleepers for some trackwork which we need to do & later installed some in an upgrade to the Transit Road..

Mick did some brake work on the green set bogies. These had diaphragms which were bottoming and limiting braking effort.

Barry Millner removed the point machines from both ends of 19 points for rectification work. Warwick took them home to attend to them which included a new micro switch on one and new diode insulation on the other, and internal relays for both. A defect in the Allison repair taxed our powers of deduction, but eventually we sorted it out, and both machines are now working quite well with their new internal relay cut-offs.

Signal Box

Henry has worked on A box installing the wires to make the new carriage shed signals work while Warwick did a similar thing in the signal box. After the wiring was done, Henry traced some mysterious signalling circuits to complete the records and update the signalling circuit book. All the recent work is now included and Henry is arranging prints.

The end result is that the new inner main carriage shed signals are working. A new signal box diagram was in order and the draft copy was in place for the October running day. Since then the final has been fitted. Many thanks to Russell Freeman who provided invaluable assistance!

Editorial.

I will be very brief, these end of year editorials seem to come round quicker than ever. Thank you, to those members who have contributed to the 36th. Volume of our Newsletter. Best wishes to all members and supporters of the SLSLS for Christmas and lets hope that the New Year will bring another prosperous year for the Society.

John Lyons.



The author Graeme Kirkby, hard at work on the 25 May this year at Katoomba.

Features

“Naughty Nannies”

The N.S.W.G. Rlys. 35 class; some experiences with their draughting and firing.

By Graeme R. Kirkby.

The return to active service of 4-6-0 steam locomotive 3526 by the N.S.W. Rail transport Museum in March 2004, brought back onto N.S.W. tracks one of the graceful old ladies of yester-year.

The “NN”s as they were first classed (prior to the 1924 reclassification of all NSW locomotives), were all built at Eveleigh Workshops, the first entering service in August 1914. Thirty were built up to 1917, followed by a further five in 1923. One wonders why these extra five were built six years later with the (NN2) 36 class already on the drawing board.

All the NNs were superheated from the start and were fitted with Stephenson valve gear. They had ten inch diameter “piston” valves feeding 22½” diameter cylinders and their fire grate area was 30.8 sq. ft.

Apparently at first, they were rather rough riders and suffered steaming problems on long rising grades but over subsequent years their riding was improved, generally speaking, to be about the best in the service. Numerous experiments and tests were carried out over the years to try and improve their steaming and it would seem this was in some ways successful --- provided optimum conditions of the loco and coal provided was maintained.

In January 1925, the first 4-6-0 36 class was introduced, of which, ultimately, 75 locomotives were built. These locomotives while only slightly more powerful than the 35 class, were blessed with a self-cleaning smokebox which gave a more even draught through the boiler tubes, a hopper ashpan with flushers, outside Walschaerts valve gear, ten inch diameter “piston” valves and 23 inch diameter cylinders. (A small number of engines were later

fitted with twelve inch diameter valves, an improvement over the small ten inch valves.) The grate area was 30.5 sq.ft. The 36 class was coupled to a larger tender of 6,250 gallon capacity as compared to the 4,045 gallon tender of the 35 class. Fourteen ton coal capacity of the 36 class turret type tender compared favourably for long distance running over the 35s nine and a half tons. These features of the 36 class helped eliminate engine relay working on the long distance passenger trains. For twenty years the 36 class were the principal express loco of the NSW railways on the longer and harder through routes, while the 35 class operations over the years gradually contracted to northern depots, principally Broadmeadow.

The last 35 class was withdrawn from regular active service in mid 1968 while the 36 class lasted only a little over a year longer. Your author worked 3638 on a Southern line passenger service in July 1969 less than two months before the last one, 3616 was withdrawn.

3526 was withdrawn from regular service in 1966 but she continued in occasional service on RTM or ARHS special tours until April 1974, when a certain Railway Commissioner banned all further steam working on NSW Government lines. A “last ever” steam train was run, a tour to Oberon and return on 21-4-1974 where 3526 and 3820 were the motive power used to Wallerawang on the forward journey and from Tarana on the return. (A 45 class diesel was used on the steep 1 in 25 graded branch to Oberon). Your author was also the fireman on the Nanny on the up journey and being the apparent last run of steam, it was a rather sad and melancholy trip, not helped by late running and a wet night.

Not until 1977 did steam start to make a tentative return to NSWGR tracks but 3526 was not to be part of that scene for another 27 years. During 2003, staff at RTM Thirlmere gave her a tune-up, in particular, new tubes, flues and other boiler work along with tender tank repairs.

As her return to service drew near, thoughts of the fickle

nature of “Naughty Nannies” returned to many of us “older” enginemen who could recall earlier firing days with perhaps not-so-fond memories. To be fair, “Nannies” in my somewhat limited experience were a very good engine, of fleet foot, strong and with good riding qualities compared to the other 4-6-0 types. Their steep sloping firegrate, a fraction over nine feet in length, meant that ideally they should be fired with a bank of coal at the rear of the firebox with both back corners filled up level with the firehole door using good, large lumpy coal. The draw through the tubes when steaming was rather strong



36 class Belpaire boiler at Thirlmere 22-08-2004. Photo GR Kirkby.

with the 35 class and the vibration of the engine when running carried much of the coals down the remainder of the sloping firegrate. This principle held true for all NSWGR passenger engines with sloping grates, but in particular, the 35 class.

Another small but significant characteristic of the 35 class when steaming, was an extremely savage draught evident in one small localised area of the grate. This was about three feet from the rear of the firebox for a distance of about eighteen inches and right across the 3'4" width. This savage draught had a tendency to catch the unwary-- perhaps the fireman was inexperienced in the way of “Nannies” and had not built up his fire correctly. Perhaps the coal was on the small side, or perhaps the Driver was a little heavy-handed. Whatever, very quickly the bank could be chewed out from underneath and “pulled”, or as some said, “turned over” and most of the coal finished down the front of the firebox. Conversely, the draught through the front three-quarters of the grate never seemed to be as strong or efficient as it could be. If a fireman’s fire had been “pulled” with a consequent heavy fire over the front half of the firebox and no strong draught to burn it, it lay there more or less a smouldering mass and steam pressure fell by 30 lbs. / sq. in. or more. If the grades and train load were moderate, one could struggle on, perhaps making sacrifices with boiler water. But many were the cases where the Guard booked on his journal, “Loco raising steam” or “Slow running”---- and the Driver had to answer for his fireman on his report sheet at the end of the shift.

As an aid to minimise the risk of coal being pulled, a fireman would try to fire the largest and heaviest lumps of coal onto this bank and also left the firehole door opened when steaming hard. To a degree, this reduced the intensity of the draught through the firebed, especially at the critical area near the rear of the firebox, but of course, allowed cold air to enter which defeated the purpose of keeping the firebox hot. As a compromise,

firemen often “banjoed” the firehole door, that is, after firing a round they fixed the shovel upright in a lip of the doorway which caused the inward draught to then split and go around the sides of the shovel. The strong draught kept the shovel from falling down.

36 class engines had many similar dimensions to the 35 class although the firegrate was not quite as steep. They also had a strong tendency to pull the fire but usually only if the Driver was a “podger”----was driving too hard, having the valve gear out too deep, creating too heavy a blast. A violent wheel slip could also destroy the fire. Action on the fire was similar to the 35 class but having an ash pan of different design, the heavy localised draught up through the grates some three feet from the firedoor was not as severe nor as concentrated in one small area. If the fire was pulled on a 36 class, there was the usual steam pressure drop but due to better draughting in the smokebox and ash pan and by dexterous firing by the fireman and nursing by the Driver, steam pressure generally could be recovered after 40 minutes or even sooner. This was because the better draughting allowed the “green” coal at the front to eventually burn through satisfactorily.

Around the late 1940s a few 36 class engines were fitted with a pressure gauge in the cab that displayed exhaust steam pressure. The remainder of the class were also fitted during re-boiling in the 1950s. This gauge was a guide to Drivers not to work the engine too “deep in gear” and so risk blanketing the spark arrester and / or pulling the fire. The 35 class were not fitted with the gauge. The gauge was calibrated from zero up to 15 lbs./sq. in. and had a red line drawn at the 7 lbs. mark indicating to the driver the absolute maximum to which he should work the engine, 3 lbs. being the ideal maximum. Among enginemen it was known as the “podger gauge”, “podger” being the colloquial term for a hard driver. A glance at the gauge by the fireman would be quick confirmation of how his mate was working the engine---- if



Smallish Gunnedah coal on 3526 on the RTM loop line, 22-08-2004. Ideally coal should be 2 to 3 times larger lumps for 3526. Photo GR Kirkby.

he did not already know!

Over the years, I've often wondered why the 35 class should be so finicky, having experienced one or two not-so-good trips, yet other trips seemed trouble free. It seemed, whenever a fireman boarded a Nanny he was about to walk a fine line between having a good or bad trip. My earliest firing on a Nanny in April 1966, was working No. 19, the 1.00am paper train from Sydney to Newcastle (46 class electric loco to Gosford). I knew nothing about Nannies but I'd heard plenty of stories of them being the nemesis of many a fireman----- but with the light load of No. 19 probably around 180 tons and easy grades, I didn't have any trouble an these trips.

Another trip in March 1967 from Broadmeadow to Gosford (and on to Sydney with a 46 class) on 3529 working No. 8 North-West mail with a load of around 380 tons was not so good. After the two incoming 36 class had uncoupled and gone to loco, we coupled on with our single Nanny. Departing Broadmeadow just after 4.00am, we'd been steaming just seven minutes, climbing the 1 in 75 of Adamstown bank and I knew from the amount of coal I had fired, I just didn't have the results on the steam gauge. I didn't know what the problem was but it was very hard to resist the temptation to shut the firehole door. Had I known what the problem was, I would have shut it straight away! Somehow we got to Gosford without loosing time but I certainly had to sacrifice boiler wa-

ter on the short 1 in 75 rising grades to Wyong and regain it the best I could on the down grades. Steam pressure hovered between 140 and 170 lbs. for most of the trip. Approaching Gosford as I let the fire run down a little, I could see a horrible sight, the fire in the front half of the box was almost to the brick arch----she'd turned the fire over, obviously at the start out of Broadmeadow. Probably due to my inexperience not building up a satisfactory fire in the loco depot before whistling out. During the one hour 15 minute journey this coal at the front of the box never burnt through and remained heavy.

On another occasion, this time with a 36 class to Lithgow in March 1971, I had my fire turned over on starting away from Parramatta due to crass stupidity of my Driver deliberately making the engine slip. We were on our way to Lithgow with an Australian Railway Enthusiasts' club tour with a load of about 380 tons. We were looking a bit sick for steam on the 35 minute run from Parramatta across the "speedway" to Penrith. There we took water, attached a 46 class for assistance with the load to Katoomba and waited for a Down inter-urban to pass. We were there some thirty five minutes and the fire was looking horrible, all of it at the front and not burning as it should. The Loco Inspector who was riding with us reassured me it would soon burn through and sure enough after some ten minutes steaming from Penrith, she started coming around and by Glenbrook we had full pressure--- and she never looked back.

Other trips with Nannies over the Northern line on the paper train or on No.274 goods from Honeysuckle to Darling Harbour with 500 to 600 ton loads were quite ok and I recall one Driver remarking to me, "Just fire her like a 38'er, son!"

In my ponderings, I've wondered why the 35 class were for many of their years, allotted to Broadmeadow and other North Coast depots. Why weren't some of them allotted to Junee, or even Eveleigh for South Coast running to Wollongong? Was it because the running out of Broadmeadow was largely over easier or generally shorter grades or, the availability for 35 class of large and good quality steaming coal from Northern district collieries? This coal was often referred to as "dynamite" or "kerosene coal". Perhaps the Railway Department Mechanical officers recognised that they needed to "look after" the 35 class in this slightly less demanding division with its shorter grades, better coal and water and probably shorter sections between water columns, while at the same time achieving

Subject. (covering 8 years)	32 Class	35 Class	36 Class	38 Class
(i) Number of "fire" troubles	8	11	13	1
(ii) Total number of entries for all loco problems, (mechanical/boiler)	175	34	151	73
(iii) Percentage of "fire" troubles against total number of entries for all loco problems.	4.5%	32.3%	8.6%	1.3%

better crew familiarity by regular crewing.

Getting back to 3526's return to service. When she returned to RTM tourist trains in March 2004 I was fortunate to have some small firing turns but cold shivers went down



3526 at Broadmeadow, to work the 150 Year Special 30 March 2007. Photo GR Kirkby.

my spine when I saw that tell-tale savage draught across the fire grate just one third way down the firebox. While at the end of the day after only relatively light steaming, an abnormal amount of fire was evident in the front half of the box with evil looking blue flames licking across the top. Steaming had been good when steaming light but fell away a little when climbing a grade and especially when the injector was operating.

I found myself asking questions, why was the draughting in the firebox so uneven, heavy enough in one small area to lift the coals off the "rosebud" grate and far too light in the front two-thirds? I searched through my "library" looking for some detailed information on 35 class. Years ago I saved from a garbage bin at Eveleigh depot, an armful of old steam loco failure records. Specifically, these were NSWGR X109 forms giving a week by week summary of steam locomotive failures and casualties concerning Eveleigh depot enginemen and / or Eveleigh depot engines in service. These summaries covered the years from 1957 to 1965 inclusive, except for 1961 which was missing. Going through each sheet one by one, I studied the entries only concerning passenger type engines with sloping grates of the 32, 35, 36 and 38 class locomotives, ignoring 20, 30, 50, 53 and 55 classes.

From these summaries I was particularly interested in the entries that were debited to firing troubles, "pulling the fire" etc., but not necessarily for bad coal. For eight years of records, "fire" troubles were apportioned to the various classes against the total number of entries, thus:-

The lesser number of entries in line (ii) for 35 class would probably reflect the proportionally less work Eveleigh men did on Nannies over those years as compared to the other classes. While we do not know exactly how many jobs Eveleigh men did on each class of loco to get a clearer picture, they were working them reasonably frequently during the years, 1957 to 1965, although not as frequently as the other three classes. But from line (iii) it can be deduced there

was an abnormal number of "fire" problems as compared to all other types of problems incurred by the 35 class. On the other hand, one could argue from the brief information we have, that perhaps the 35 class was an exceptionally reliable and trouble free loco so making the 32.3% figure artificially high but I seriously doubt that was the case. The moderate amount of entries in line (ii) for the 38 class would reflect the more reliable running of these engines to the other classes reviewed, especially considering the high mileage these locos accrued (averaging around 99,000km/yr over their life span) and the considerable amount of time Eveleigh enginemen spent on their footplates.

I believe however, the high percentage of "fire" problems with the 35 class reflects difficulties that were encountered firing these engines. This percentage for Eveleigh men also compares exactly with Broadmeadow enginemen who worked 35 class far more regularly, which information I found in M. Morahan's book, "34 and 35 Classes" (NSWRMTM, 1998) page 184. This figure was ten firing problems out of 31 entries of other defects (32.2%) covering the first six months of 1960. The subject matter on this particular page was about small coal on 35 class and the troubles it was causing with locomo-

Keith Craig firing 3526 on the RTM loop line climbing from Picton to Thirlmere on 22-8-2004. (165psi, ½ regulator on 1 in 40, 28 km/h load 6 for 250 tones. 1½ turns off the block)



tive firing. Curiously, no Eveleigh enginemen were recorded on my X109 forms having troubles with 35 class throughout 1960.

On page 177 of Morahan's book on the subject of small coal supplied to Broadmeadow depot, he notes a letter dated 1960 from the Fuel Supervisor in the Divisional Superintendents' office in Newcastle to the Superintendent of Laboratories at Redfern, (quote) "It is a well known fact that 35 class locomotives have never had any steaming margin even with the best of firemen." A telling quote, perhaps.

In my records there were numerous entries by crews on 35 class with "fire turned over" and "raising steam and water" or similar. Again from Morahan's book, the section on the 35 class contained a wealth of information, much of it correspondence between Mr.C.A.Cardew, Locomotive Test Engineer of NSWGR and Mr.H.Young, Chief Mechanical Engineer, regarding the short-comings of the 35 class, especially in regard to their steaming or lack of it and proposals to overcome these problems. Much of this information was penned in the 1940's and of course, history reveals very few of the proposals were carried out, or not done across the whole class. Experiments were carried out by shortening the brick arch by some eighteen inches as late as 1959, presumably to assist in increasing the draught towards the front end of the firebox. Proposals to re-boiler the 35 class with a 36 class boiler and to fit a hopper ash pan with flushers, was unfortunately, never carried out. (Reading John Thompson's book "36" published NSWRTM 1988, also reveals

many ideas and proposals for the 36 class that were never taken up.)

Enginemen complained of the coal being too small, which on the 35's with their strong draw on the fire and steep firegrate, became a rather critical issue. Tests showed that draughting in the ashpan was inadequate and under heavy steaming, a vacuum was created there. Again from Morahan's book (page 143) there is correspondence from Cardew to the C.M.E. dated May 1942. The subject matter is "Unsatisfactory draughting and ashpan problems with the 35 class", in particular, 3534, where a test was carried out on No.7 North mail to Newcastle. Interested readers are encouraged to read those pages as it is more than can be written here. But suffice to say, the crew struggled for steam on the rising grades to Hornsby --- and struggled to become financial on the downhill run to Hawkesbury River. Cardew noted that when the engine was steaming heavily on rising grades, the fire was precipitated to the front of the firebox despite keeping the firehole door opened and the fireman's best efforts. Only a small portion of the fire at the rear of the box was white hot, while the front three - quarters of the grate was covered with a "thick, heavy red mass" which was not being burnt satisfactorily. This was deduced to be deficient draughting in the ashpan. Subsequent vacuum tests confirmed excessive and uneven vacuum in the ashpan. This was caused by totally inadequate air inlets to the pan amounting to only 6.5% of the grate area. Recommended percentages should not be less than 14% and ideally, at least 18%. I ask, why were these engines

in service with this obvious deficiency, some 28 years after entering service? Experimental alterations to improve the air openings of 3534 were carried out with great success and recommendations made to alter all 35 class pans when the engines came in for tone-up. It is also curious that these troubles were occurring in the early 1940s despite the fact that a new and improved ashpan was fitted to 3510 in 1931 and recommendations given then to renew the remainder of the class (see page 82). In the light of continued steaming problems of identical nature during the 1960s (as shown above) and those of 3526 in recent times, one seriously wonders whether anything was done at all!

Further research in papers from the Mechanical Offices conference for the Northern Division held at Newcastle in November 1945, has shown a few isolated cases where during April 1945 ashes from gaps in the ashpan of 3518 had contributed to the left trailing axle box, No. 5 running hot on a North Coast service. Other 35 class out of Cardiff workshops around this time were also noted with gaps in ashpans. It had also been found a number of 35 class ashpans were too short for the firegrate and with a view to the approaching bush fire season, the Works Manager at Cardiff

Letters to the Editor

60th Anniversary.

The Editor,

Congratulations to the Sydney Live Steam Locomotive Society on reaching 60 years of successful operations! I have just read the latest issue of our club Newsletter (Volume 36, No.3.) and I wish to say it's one of the best issues I have read. I found it a very "member orientated" issue, every page filled with the names of members achieving goals both within and outside the club's boundaries and plenty of "action" photos.

My congratulations also go to our Editor, John Lyons, on his remarkable achievement of not only 31 years as Editor, but for consistently producing a worthy club newsletter, I'm expecting to see it on the news stands shortly.

Regretfully, I could not attend our club 60th. Anniversary Dinner, but having read the Newsletter, it gave me a good insight to what was obviously a very enjoyable evening.

I wish to add my thanks and congratulations to all our club officials for their untiring efforts in steering our club to the proud, healthy and active position it holds today. Well done Henry, Warwick, John and our Directors and Boiler Inspectors.

Yours sincerely, Graeme Kirkby 19.8. 2008.

Running Day Appreciation

Dear Sirs,

I am writing to you to express my gratitude and thanks for an absolutely wonderful day provided for by your superb team.

Last Saturday was the first time that we have been to the SLSLS tracks at West Ryde. The delight and wonder on the faces of all the kids (little & big) was a permanent fixture during the day and for days to come.

I would like to Thank all of the volunteers and members for providing such a wonderful attraction, fantastic surrounds & helpful staff.

We will definitely return!!

Regards

Ben

was directed to manufacture and fit end plates to have an overlap of two to three inches. No explanation could be provided as to why these pans had been in service without being detected.

Being armed with the information regarding the ashpan air inlets(s) should be at least 14% of the grate area, I started measuring air inlets of various classes of loco at RTM Thirlmere, where it was possible to gain access to the ashpan. The Baldwin 2-8-2 59 class came out on top with 22.9% air inlet to grate area. The 38 class was 15.3%; 36 class 20%; 30 class tank, 9.5%. 3526 was only 10.3% which also included small inverted air inlets along either side of the ashpan. I believe these may have been an addition at a later date. The principal air inlet on the 35 at the front of the ashpan only measured 7" x 25", while each side inlet measured 3" x 49" with a hood over them to deflect the air downward. The total air inlets amounted to 3.2 sq. ft. being 10.3% of the grate area. The main air inlet at the front was constructed in such a way that it directed the incoming air sharply downward to the bottom of the pan as it would be a very high velocity when steaming, trying to destroy the vacuum, it would miss the front half of the firegrate. My theory was that this air rushing in at such high velocity along the bottom of the ashpan then hit the section of the ashpan floor where it rises almost vertically to clear the rear driving axle. This location corresponded perfectly with the area of the firegrate where the excessive draught was seen in the firebed, about three feet from the firehole door.

After I had experienced three trips with 3526, where its steaming on rising grades, especially against the injector, I thought was rather lack – lustre and where slightly excess fuel lay on the front half of the firegrate, I approached Mr. Ian Martin, Maintenance Manager for the RTM at Thirlmere. After explaining to him my thoughts that the engine should steam better and the uneven draught in the firebox was not helping the cause, I asked if he would look at a way of increasing the size of the air inlet in the ashpan. His reply was of a positive nature.

Some months later (August 2004) I was again at RTM Thirlmere, this time to operate their Heritage loop – line train service between Thirlmere and Picton. I was expecting the usual 2705 as our engine for the day but was pleasantly surprised to see Ian had 3526 in steam. It was noted that he had removed the front ashpan doors and in their place had temporarily tack – welded some spark arrester mesh. The gauge of the mesh gave about 60% air flow and measured 7" x 24" which was in addition to the fixed air opening of 7" x 25". I calculated this boosted the total air intake area / grate area from the 10.3% up to 12.6% ----- and we were about to find out what a difference that made.

With five steel for about 198 tons, we went tender first the seven kilometres down to Picton and there ran around the train for the return up the 1 in 40 grade. With the smallish Gunnedah coal (about one third to half the size of a mans' fist and far too small), we built up the fire by forming a short, but high bank right up to the lip of the firehole door and more so in both back corners. In this regard I was recalling what a Driver

once said to me, "Fire her like a 38". Over the remainder of the box was fired about ten shovels full, spread evenly. When moving about the yard or steaming lightly, the firehole door could be closed if desired but once underway and steaming moderate to heavy, the door was kept open all the time and only the two back corners were fired. Not one lump of coal was fired over the remainder of the grate but one could tell the draught was taking it there!

After about four minutes steaming upgrade from Picton, the injector was put on and a minute or so later my mate and I were surprised when the safety valves let go on the maximum 180 lbs./ sq. in. I thought, "This is alright!" and as we were now steaming heavily on the 1 in 40, I fired another half dozen or so and she blew off again. And so it was, we were able to "play" with the engine for the 15 minute run up to Thirlmere and make her blow off at will against the injector. After each firing I "banjoed" the firedoor by placing the shovel upright but facing outwards in the firedoor way. My fireman (Dave Malcolm) who had never been on a Nanny in his life, fired the remaining two return trips and he did equally well, if not better. On his first fire, we started off up the loop – line about 20lbs shy but he brought her round and we steamed up the grade in magnificent fashion at about 30km/h with a good four square beat, just 1¼ turns back from full forward gear (four turns to mid – gear with an eight turn screw, block to block.)

At the end of the day when we were stabling her in the shed, the firebed looked like it did at the start of the day, flat and thin from end to end and just the remains of the bank which we had allowed to run down. Over a cuppa with Ian Martin and a few other RTM volunteer workers, we held our "post-mortem" of the days running and we agreed that "letting her breath" seemed to be the answer to 3526s previous dubious steaming when on heavy grades. Later trips came to reveal how fine a line this success seems to be.

On 22-8-2004, I was again at RTM Thirlmere to work the loop line with 3526. My mate on this day had previous experience with the 35 class at Broadmeadow about 40 years earlier. Ian Martin had now made a more permanent alteration to the ashpan inlet. He had now replaced the ashpan doors (which he had removed on 1-8) and instead had removed the bolted-on air vent above the ashpan doors. The flow of air was now back to what it had been at the beginning and the air opening now measured 10" X 24" but was part covered with spark arrester mesh. All of these alterations unfortunately again slightly reduced the total air inlet from the previous 3.9

Diary

2 December	Members Meeting
6 December	Christmas Party (evening)
20 December	Public Running Day
31 December	(Wed) New Years Eve Run
6 January 2009	Director's Meeting
19 January	Public Running Day
3 February	Members Meeting
21 February	Public Running Day & Next Newsletter!

For the information of employees and not for publication.
Alterations to Signalling and Safeworking

West Ryde (North): Bringing into Use New Signals & Levers for the Inner Main Carriage Shed.

Since 19 October, new and altered signalling was brought into use to facilitate movements to and from the new inner main car shed. The new signals and levers are as follows:

Signal	Designation	Remarks
1A	Home, Inner Main	Previous No.1 is now 1A. Clearance of 1A or 1B is dependent on 6 points.
1B	Carriage Shed to Inner Main	This signal is for departing the carriage shed
17	Inner Main to Carriage Shed	This signal is for entering the carriage shed
29	Shunt on Inner Main or Inner Loop to Inner Main	This lever is for movements towards 17 signal via 23 points normal. It operates on existing signals 22 & 24

No.6 (north) points will be power operated at a later date. No.6 (south) points is required reverse to clear 17 signal. This ensures that movements into and out of the shed are fully protected from a train approaching on the inner main by No.6 (south) points. When 17 signal is cleared as authority for the movement, drivers need to check the non interlocked points No.6 (north) and to select the correct road into the shed. The correct description for each lever has been provided on the lever plates.

Pulling List for movements to / from the inner main carriage shed.

Inner main to carriage shed:

6 then 29 then 17. (Note via 19 & 23 normal)

(7 can be cleared for a simultaneous movement from the inner main to the inner loop.)

Inner Loop to carriage shed

6, 19, 24, 29 then 17

Carriage Shed to Inner main

6, 1. (7 can be cleared for a simultaneous movement from the inner main to the inner loop)

The signal box diagram has been updated accordingly.

Signal and Telegraph Engineer
October 2008.

sq.ft. (12.6% of grate area) down to 3.6 sq. ft. (11.6%)
 We set off down to Picton, running tender-first as usual, but on the way I noticed my mate was a bit "heavy handed" with his firing as he fired a number of times which was unnecessary and a lot of black smoke and blowing off ensued. Our load was six cars for 250 tons. (Full goods load, Picton up to Thirlmere for a 35 being 295 tons).
 On the first trip she steamed reasonably well, though not as good as on 1-8. I had given her a good half regulator with 1½ turns off the block and we went up the 1 in 40 at a steady 28 km/h. For the second trip I wanted to see how far I could push the engine before she either slipped or started to pull the fire. I went to two – thirds regulator at about 1¼ turns back and managed to achieve 30 km/h (same as 1-8 with 198 tons) but my mate sharply drew my attention to the fact that his bank was starting to disappear. I immediately eased back on the regulator slightly and brought the screw back one notch (about 1/6 turn). She continued to steam much as the first trip.
 On the third and last trip, my mate drove and I fired, but I felt she only steamed reasonably, just holding its own against the injector but nearing the top of the grade, I was forced to turn it off for a minute as steam fell to about 165 lbs. My mate had driven with barely half a regulator

and 2½ turns back at only 22 km/h and with the moderately heavy fire which was evident in the front two – thirds of the grate, probably was not hard enough to get her white hot. Perhaps there is also a fine line, especially on Nannies, of driving too hard or not hard enough.
 At the end of the day I was disappointed to see this heavy fire on the front portion of the grate, although it did knock down easily enough. I put this down to (i) my mate firing too heavily, (ii) me driving too hard on the second trip causing the fire to start to "turn over", (iii) air inlets to ashpan not quite adequate as on previous run of 1-8.
 Subsequently, 3526 has steamed from Picton to Moss Vale and return with a load of 241 tons on the 1 in 75 grades and from all accounts went very well.
 Thirteen months had now elapsed since I last worked on the engine. It is now Saturday 17th September 2005 and I am Driver of 3526 to Moss Vale on an RTM organised "150 Years" celebration special. This train is a little unusual in that it is to be hauled by five steam engines up the 50 kilometres of 1 in 75 from Picton to Bowral and on easier grades to Moss Vale. The engines concerned are mainly of the small type --- 1709, 1210, 2705, 3112 and 3526, an odd mixture. The load is 13 vehicles for 629 tons, in theory, 125 tons per engine.

The five engines, all coupled, ran light from Thirlmere down to Picton, shunted the train and set off on the 104 minute run. During the shunting at Thirlmere and again at Picton, I had to operate the reversing screw a number of times when changing direction but being a bit slow in engaging my "grey matter", it didn't click in my mind that I was now turning a 16 turn screw (previously it was eight and had been changed by Ian Martin some time earlier). Consequently, when underway to Moss Vale, I drove the engine about 3½ turns back when in fact I should have been about seven turns back! I think it was Barry Tulloch on his 3112 right in front of us, who later remarked, "It sounded like you were pulling your weight!" But pulling our weight was not for long. All seemed to be going well up to about the Bargo River bridge where I reopened the regulator a bit more after running down the short dip there. It was around here that my mate got back into some slack coal in the middle of the tender and that's when the bank disappeared. From this point on, our trip went slowly backwards --- in same proportion to the steam gauge needle; Suffice to say, while all the other smaller engines steamed along in magnificent fashion and pulled their weight, we on the Nanny limped into Moss Vale with 90lbs of steam and half an inch of water in the glass, but no reflection on my mate. Over the last ten kilometres we had barely pulled our weight. I noted before our misadventure we had been steaming up the grade at about 45 km/h but on the grade near Aylmerton tunnel with the Nanny only working at about 25%, we were back to 35 km/h. The two hour stop over at Moss Vale allowed us to become financial again although the fire remained heavy. We hadn't any worries coming home down the 1in 75 grade - what a wonderful thing gravity can be!

One final trip on 3526 was just recently in April 2008 where the engine performed faultlessly. Our club member, Ray Lee and I were mated up as the crew to work the Nanny from Goulburn to Picton coupled in the lead of the recently restored to service, 3642. This run was the return of an RTM day trip to Goulburn, our load being a healthy twelve vehicles for 545 tonnes. Ray had his firing of the 35 well in hand, the engine steaming brilliantly on the numerous 1 in 66 rising grades of Wingello and Bundanoon banks. The start from Bundanoon station being especially stirring as the crisp four square beat given by the Stephenson valve gear coupled with the deep, ponderous exhaust from the 36 just over our shoulders was more than enough to stir the blood!

To conclude, I would like take a number of pertinent quotes from the late R.L.Abbott's articles that were published in a number of Australian Railway Historical Society Bulletins of years ago. The Bulletins are No.'s 390, 442, 531, 546 and 563. I have found them all very absorbing in the details of steam locomotive design ratios and performance. Whether good or oth-

erwise, I'm sure many of these features, facts and principles apply equally to our model live steam locos.

(i) "Fundamentally, the power output and performance of a steam loco depends on the amount of air 'burnt' by the fuel. This necessitates a large firebox both in grate area and volume, a boiler barrel with adequate gas area through the tubes and flues and a front end draughting arrangement which creates the maximum smokebox vacuum at minimum cylinder back pressure, so as to move the greatest possible weight of air through the fuel bed."

(ii) "If the steam loco is looked on as an air burning heat engine, the importance of the front end becomes more apparent and at very high firing rates, or with oil or mechanical stoker firing, the ultimate limit of evaporation and power generation is set by the amount of air which can be 'burnt' through the firebed and the firebox. Thus, in a loco boiler there is a triangular relationship between coal, air and steam --- to burn more coal you need more air, which in turn means you need more exhaust steam to create sufficient draught to burn more coal to get more steam!"

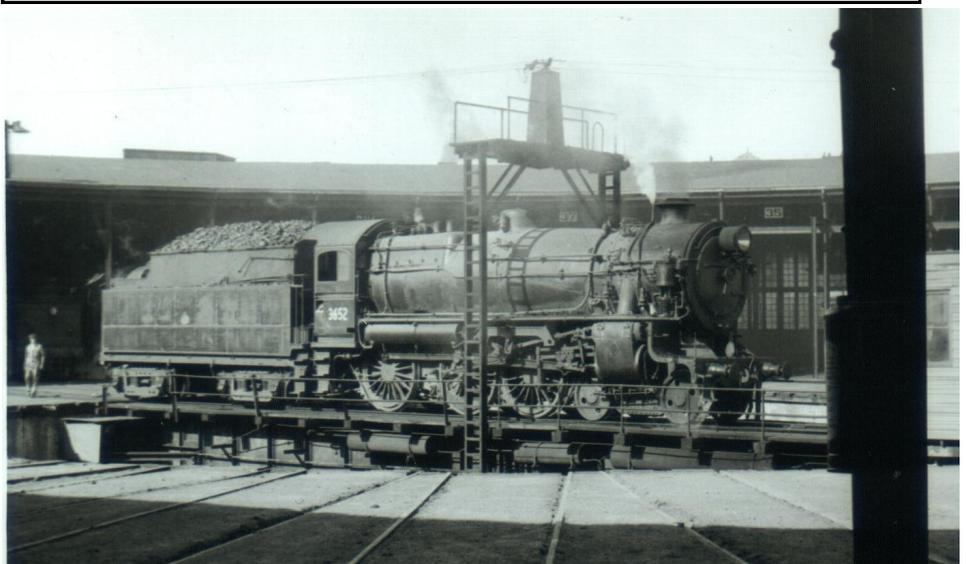
(I have found from experience that some classes of NSW engines steam better when driven a little harder than normal -- up to a point --- while others steam quite satisfactorily at "normal" rate but can fall away in steaming when being worked harder while the firing rate becomes too much for the fireman to manage.)

(iii) "Blast pipe diameter is usually approximately 25% to 28% of cylinder diameter."

(iv) "Free gas area is the area of tubes and flues. A good front end --- to burn air efficiently, a large firebox volume is needed, the gas area through the tubes should be a minimum of about 14% of the grate area while valve gear should let the steam in and out through the exhaust with the least wire drawing losses."

(v) "Smokebox draught -- normal draught of most steam locos is eight inches to ten inches of water vacuum in the smokebox. Fuel economy -- firing rates should be 50 lbs to 90 lbs of fuel per square feet of grate per hour. Anything above 120 lbs/sq.ft. of grate / hour is wasteful."

3652 on the turntable at 1 Shed Enfield 14-10-68. Photo: GR Kirkby.





Above: Your Board of Directors, from left: Mick Murray (Vice President); John Hurst (Treasurer); David Thomas (Director); Warwick Allison (President); Henry Spencer (Secretary); Jim Leishman (Director); & Barry Tulloch (Director).
 Below: Andrew Allison takes the Old Girl for a gallop just to prove it still goes OK!



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Public Running Day is the **THIRD** Saturday in each month from 1.30pm. Entry is \$2 adults, \$1 children. Rides are \$1 each.
 To ride on the trains, enclosed footwear must be worn.