

**CASTLEDARE
MINIATURE RAILWAYS**

W.A. (INC)
www.castledare.com.au

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Castledare Miniature Railway
P.O Box 337
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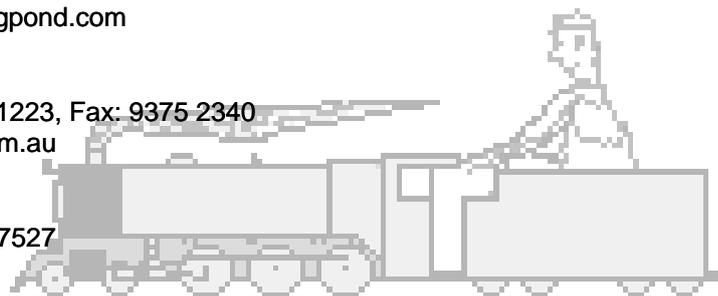
First Aid Officers: Keith Watson, Tania Watson, John Ahern

The Castledare Miniature Railway is sponsored by:

Coal Supplies: The steam locomotives at the Castledare Miniature Railway operate with coal supplied by Premier Coal.

Cover page: The late Colin Cave driving his loco 'Sir Charles Court'

Photographer: Unknown



Castledare Miniature Railways

P.O. Box 337 Bentley W.A 6102

President's Report

I start this month's rambling with the sad news that Colin Cave passed away on Tuesday 14th June. As we all know Colin was never in the best of health since becoming a member, with limited physical ability and poor hearing. He was the owner of the railway's first battery powered loco which he had built for him and named after Sir Charles Court whom, I believe, had been very helpful to him when he first came to Australia and set up Riverton Engineering. Colin was someone who was used to getting his own way most of the time and this at times rubbed other members up the wrong way, but I felt that this was partly due to his frustration of not being able to do things himself due to his ill health. He was however someone who was generous in the form of regular small donations that he felt helped offset his inability to do work around the railway. He was also someone that I found could be reasoned with if all the circumstances were explained to him. The committee and members extend their sympathies to his wife and family.

The June long weekend was another busy weekend, but without the extra burden of the AMRA exhibition to organise and operate. The weather was typical of Perth in June with bright blue skies and sunshine with cold nights and the Sunday run was busy early both on the track and in the Canteen. New member Luke drove Dennis as I was DO for the day and on his first trip ran short of steam so had to be rescued by Vic and his loco. The second trip I went out with Luke to give him a few tips on firing Dennis and by the end of the day he had it well under control with a full boiler and good head of steam as he approached Niana each time. John Smith had his loco back in steam after quite some time but he too suffered from steaming problems but I'm sure John will soon have that all sorted. The club loco City of Canning derailed on the curve after Stanbridge and this turned out to be a problem with the front axle in the rear bogie that I'm told is already being repaired. We were all kept busy for the first two hours and then things became quieter, but from what I could see everyone seemed to enjoy the day and I thank all who were there. Unfortunately for Trish at the end of the day she got a small but hot cinder in her eye even though she was wearing glasses and it was washed out with the help of Eno, but it still gave her a lot of discomfort. This meant she was unable to be at the railway the next day but I'm pleased to say she suffered no lasting damage to her eye and is now fully recovered.

Then again the next day we ran trains from Wilson to help the City of Canning celebrate Foundation Day. The event started at 11.00am, but we seemed to think it was starting at 10.00am, so it meant we were ready in plenty of time and the first train, Dennis, driven by myself was away at about 10.30. Unfortunately Dennis decided he did not want to drive himself further than the Little Stone Bridge. This was due to the fact that the left hand engine valve rod had stripped the thread in the keeper, so I quickly radioed for assistance. (Yes, yes I know you don't believe I acutely had both a radio and used it 😊) so Vic once again that weekend came to the help of Dennis. Dennis and its empty train were quickly shunted back into the yard and Vic took the stranded passengers back to Wilson Station. Dennis was put away in the shed in disgrace and Betsy was put into service and ran the rest of the day in its usual grand style. Unfortunately Vic's loco had succumbed to all this pushing of steam trains and it too suffered damage to its rear drive bogie, but I'm pleased to say that Vic has now repaired this and his loco is back running once again. I think we carried around 1200 passengers on the Sunday and 750 on the Monday, and would like to thank everyone involved over the three days.

The second Saturday workday was once again well attended with several groups working on different projects around the railway. There was one track gang replacing sleepers from the double bridge to just past the loop and I think this now means that section is entirely on plastic sleepers and then they laid new ballast. Another group worked on replacing some rusted ties on the loop behind the clubrooms while others dug a trench and installed cabling for the new placement of signals. Also others were busy welding up lengths of T rail for the Fern Road track replacement. With good planning and a willing workforce a lot of work was achieved by the dedicated members in a jovial and pleasant atmosphere. While all that was going on, Geoff Thompson and myself removed the old Honey Suckle from the canteen which was a serious fire hazard and mostly dead. A new wire trellis will be installed and new climbers planted and the area generally cleaned up.

Vic's son Mark with Vic acting as his TA have installed more trusses in the clubroom roof and the ceiling is now being reinstalled with new insulation. This should stop damage to both the roof and ceiling when people walk around on top of the roof.

During the month there was a serious security breach by one of our members in that he failed to secure and alarm the building properly. He also failed to inform the Secretary, as instructed to do so by a committee member, when he had difficulty setting the alarm. Also the entry in the attendance book at the clubrooms was not legible, plus the Secretary was not informed of the removal of privately owned stock as required by all key

holders. This action required the Secretary to be called out to the railway late at night to properly secure the offending door and alarm the buildings and then spend considerable time over the next two days to find out what had happened to the missing rolling stock. It is very disappointing that something like this has happened once again and leaves both club property and members' property at risk.

As most members would know I have been building my own steam engine over the last 14 years. This has been built generally in great spurts of action over a few months and then even longer months, even years, of great inaction on my part. This has given rise to members asking me from time to time when will I have the bloody thing finished! I am unable to say as to why I work in this way other than I'm both busy with other things and also lack the right amount of enthusiasm and drive to work on it. I did however reach another milestone in the form of having the right hand engine running on air on Wednesday June 15th so now all I have to do is copy everything for the left hand side valve gear and have both engines working. I was fortunate to have both sets of baker valve gear made and given to me by the late John Millman that were copies of what he made for his last and 4th engine Merlin.

On the Friday work night Mike Crean helped by Alex Ahearn was there working on the new cabling for the security system upgrade with myself stripping apart the riding car that was on the track behind Dennis which will be made into an instruction car. Ken and Craig were there working on various projects and Les Millman, Eno and John Ahearn, worked on the upgrade of the old gondola chassis. As can be seen it was a very busy time with much being achieved so I thank everyone for their contribution, both big and small.

Roger Matthews
President, Castledare Miniature Railway



Valve gear in motion on my loco



FROM THE SECRETARY'S DESK

Notes from the last Committee Meeting – these are only a brief summary of some of the items discussed.

- Rule book revision – 2011 now has been printed and available July run day (see Sue at the Canteen)
- Discussion re replacement and / or refurbishment of wooden footbridge and also extension of the picnic grounds – financial support for the project to be sourced
- Dependable has been taken off the roster for a complete service
- 3 gondolas which are currently stored in workshop are to be rebuilt - work progressing
- Reverse run day is to be held on the Sunday 24th July as a charity day for Retina Australia
- Plastic sleeper upgrade progressing, particularly in the wetland area
- Security of club facilities discussed
- General members meetings now to be held quarterly – the next being September 2011

DATES FOR THE DIARY:

Public Run Days

Sunday 3rd July —Niana Station – Duty Officer – Chris Doody
Sunday 17th July – Wilson Station – Duty Officer – Trish Stuart
Sunday 7th August – Niana Station – Duty Officer – David Lyons

Work days / nights – all members welcome to participate

Wednesday 15th June – Work Day
Friday 17th June – Work night
Wednesday 22nd June – Work Day
Wednesday 29th June – Work Day
Wednesday 6th July – Work Day
Saturday 9th July – Major Work Day
Wednesday 13th July – Work Day
Friday 15th July – Work Night

Times for the workdays are as follows: Wednesday 9am – 3pm - byo lunch
Saturday 9am – 3pm – byo lunch
Friday 4pm – 9pm – evening meal provided

Times for workdays are generally flexible – feel free to come when you can and go when you must

General Dates for inclusion in your Diary

Saturday 2nd July – Preparation of the railway for Sunday run
Friday 8th July – Committee meeting at 5.30pm

Special Run Day

Sunday 24th July - Charity day for Retina Australia (Reverse running)

FORTHCOMING EVENTS:

| Diamond Valley Railway, Eltham, Victoria, will be celebrating their 50th Anniversary in October this year. Activities will be held on the weekend 22nd and 23rd October – check out the DVR website for more information. Several members of CMR are planning to attend, further information as it comes to hand.

DVR website address is: www.dvr.com.au

Registration form for this is available from the Secretary, Ken Belcher.

| The annual Sandgroppers run will be held on Saturday 12th and Sunday 13th November – this will again be organised by the South West Model Engineers at Forrest Park in Bunbury. From all reports, this is an excellent weekend enjoyed by all who attend.

| Puffing Billy railway in Victoria will be holding the 2011 Spring Gala on Saturday 8th and Sunday 9th October. Further details will be advised via the Events Page of the Puffing Billy website at: www.puffingbilly.com.au It is proposed to have a 7¼” ground level track in operation for the weekend.

Registration form for this is available from the Secretary, Ken Belcher.

| The recent 2011 AALS convention was held at the Edgeworth club near Newcastle, NSW and for 2012 the convention will be hosted by Penfield Model Engineers, Adelaide, SA.

FOR SALE:

Received via e-mail – advice from Ben Grantham that he has approx. 180 issues of the UK Model Engineer Magazine which he will gladly exchange for a block of Carlton Mid Strength beer – if you wish to follow this up, Ken has Ben’s telephone number and address for you to make contact.

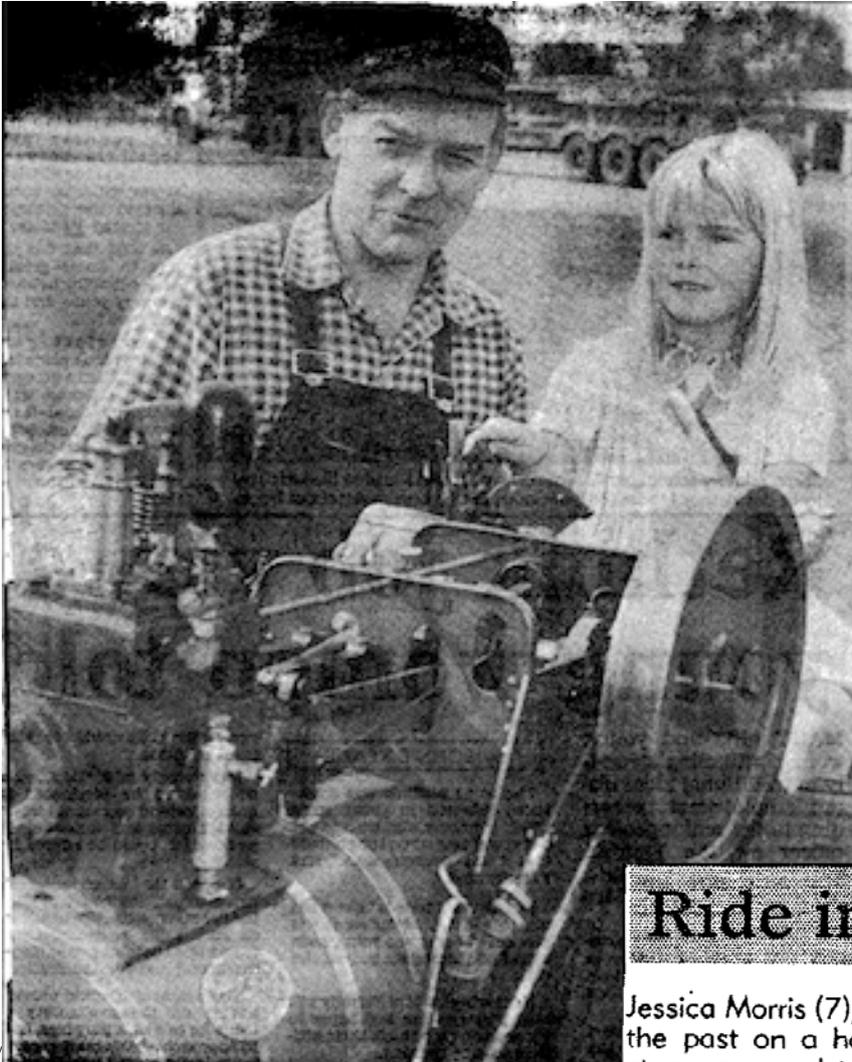
Email from Rob Cairns

Because I am not as active at CMR as I used to be, or would like to be, some members are probably not aware that Lynne and I have been away on our bucket trip to Britain for two months (April and May). It was a most enjoyable trip (well, the last six weeks were), and we saw much of rural England and Scotland, and as little as possible of the big Cities. After returning home at 2am on the 1st June (and sleeping for twelve hours), we turned our minds to important things like unpacking, and catching up with the Cinders and Soot that had come in while we were away. I have to tell you that I had a very warm feeling when I learnt of the Life Membership to Keith Price (I think no one deserves it better than 'Stork'), and I thoroughly agree with its presentation to him. One of the reasons the presentation delights me is because, more so than most of our current CMR members, I have been a member long enough to see all his efforts over the years. I don't know just how long that is, no one seems able to tell me, but a clue is in the age of Craig Belcher (recently promulgated in C and S), and I have been here since before he arrived on the scene as a babe in arms. So, I have seen Keith Price working at CMR for a very long time. As Roger asserted in his epistle, Keith has tackled just about every task at CMR that has been thrown up in his face, and CMR is so much better for his efforts. I certainly join all CMR members in congratulating Keith on his elevation to Life Membership. Well deserved and humbly accepted.
Cheers,
Rob Cairns.

Castledare Gallery

◆◆◆From the Archives◆◆◆

(Kindly donated by the Bowyers from the scrapbook of Doug Skewes)



Ride into the past

Jessica Morris (7), of Ferndale, takes a trip into the past on a half-sized Wallis and Stevens steam-powered traction engine owned by Mr Keith Watson, of Rossmoyne. The engine, Little Wonder, was displayed at a Foundation Day exhibition of model steam engines at the Woodloes Museum, Cannington.

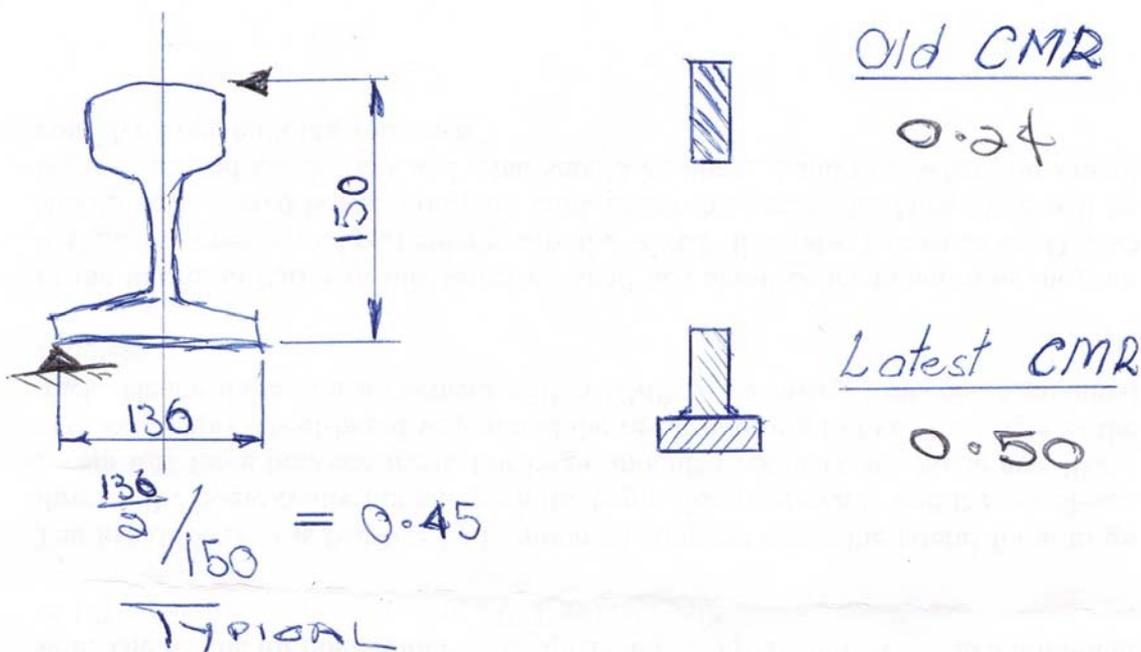
TRAIN DYNAMICS – SOME SHORT LESSONS

Part 2- Staying on the Track.

In this 2nd article I can open by asking a question, "what keeps CMR locomotives and wagons on the track?" The majority of members will state that the answer is "wheel flanges". This is correct to a point, but, I can show you wagons that run across Australia covering 375,000kms per year and after 1,250,000kms the flanges have hardly made contact with the rails with just a little wear at the wheel flange root radius, so, there has to be some other factors. These other factors are the vertical force (V) or the wheel-load on the rail, the lateral force (L) on the wheel and time. Engineers have come up with the L over V ratio which now heavily dominates rolling-stock acceptance and train handling. You may now well ask "train handling is longitudinal action, how can this affect lateral forces?" and what has this to do with CMR?

Back in the days of plain white metal friction bearings the bearing had lateral clearance on the axle journal and could slide some plus or minus 9mm. Co-incidentally, this is also about the flange clearance between the rails! Thus, as explained in Part 1, when the wheel set meanders along the track (hunts) and moves from side to side it could do so with relative ease slipping on the plain bearings and thus the wagon or car body moved along in a straight line happily bouncing up and down. Then came roller bearings and these are locked to the journal. Any natural wheel set movement then has to try and drag the bogie frame / wagon body with it. This action creates considerable lateral forces as just as the body is happily going west, the wheel-set then tries to go east. As the speed increases this body action can become quite violent and is not for the faint hearted to watch at resonant / critical speed. You just have to go fast enough! Do not try the AALS 20km/hr on CMR track! The transition from friction bearings to roller bearings did reduce "hot-boxes" and bearing maintenance costs but was accompanied by badly worn and smashed bogie centre plates and coupler / draft wear from slopping from side to side, broken springs etc **and** flange wear.

The dreaded L over V (L/V) Ratio! Before we get to the actions of the wheel set and the lateral effects from longitudinal action we shall first consider a piece of rail. The following diagram is applicable.



The big trains use a piece of rail that is slightly taller than its base width. If we place a wheel load (V) on the rail and then try to push it with a lateral force from a flange the rail will try to tip over by rotating about its base edge. Simplistically this lateral force has to be a little over 0.45V (you have to drag the other wheel tread across the head of the other rail) or an L/V ratio that railways accept as 0.55. That is, an "un-restrained rail" will roll over when the lateral force reaches just over half the vertical wheel load. In fact, an L/V of 0.40 usually

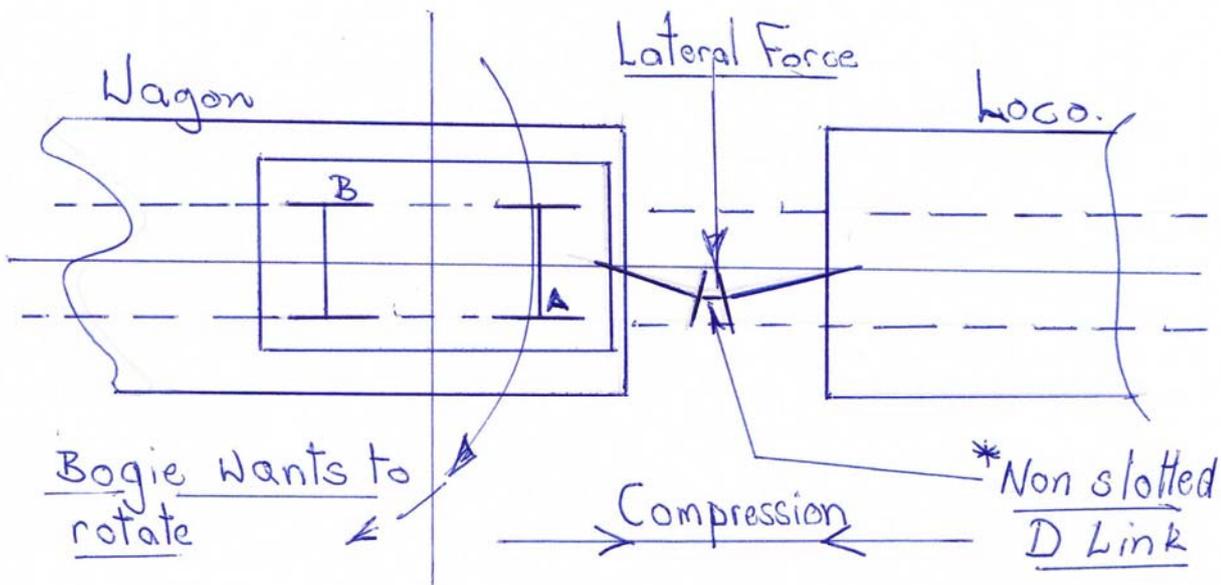
at the last bogie under a locomotive and the first bogie under a loaded wagon will shift poorly ballasted or heat affected track sideways. In the above diagram the original vertical bar rail of CMR does not perform well at 0.24 and one can see the benefits of using T-Rail where the figure rises to nearly 0.50, a wise decision.

Where are we going? The big boys do test for L/V and if a ratio exceeds 0.9 for more than 0.30seconds then the flange is starting to climb the rail face. This is pretty serious! The worst combination is a new flange on a dry worn rail and the safest where the L/V may reach 1.50, is a worn flange on a lubricated new rail. When running, the wheel load can fluctuate and one does not want too much of a decrease during a high lateral thrust. If you are thinking that curves are a problem then think again as it not only happens on tangent track, the back of the flange can be pushed into a check rail at a turn-out and climb up and the mating wheel forced to take the wrong way. Testing dynamically is carried out with instrumented wheel-sets and if such is not available the lateral and vertical accelerations are recorded. Well-defined limits are not to be exceeded. CMR is not going to do such tests, as there is no intent (I hope) to push up the speed limits, pushing the envelope boundaries so to speak.

Longitudinal train action. Longitudinal train action happens on the CMR particularly from trains slowing down either when braking or running free. This action happens, just like the big boys where locomotives brake faster than the train or when running free (locomotives have a drive system and have greater rolling resistance) the train catches up with the locomotive and there is anything from a “gentle” force to an impact.

Tom Donkin (CMR member and experienced train driver) will know well that trains brake with the locomotive system “held” off to avoid a kick forwards as the train buffs up. Locomotives also have two brake systems, one as an *independent* type for running around the yard and a slower acting type that is activated by the train brake. This latter system can be choked to allow the driver to re-act and to get the locomotive away from the train. For example, the old WAGR when introducing the R and RA class diesel electric units of nearly 2000hp virtually went up gradients at track speed with long vacuum braked consists. One particular episode was that out of YORK, a vacuum hose that was too short was pulled tight and parted on an empty sheep wagon directly behind the loco. The loco brake acted very quickly and the power knock out functioned thus allowing the train to impact the loco going up-hill! The impact crushed the wagon and caused a minor mainline derailment. This prompted a series of tests in the Midland yard with two long trains side by side (one air and the other vacuum braked) and the resultant fitting of a variable choke to the diesels. Testing was also carried out on the s.g. track between Midland and Forrestfield with a J class where we uncoupled wagons whilst travelling at various speeds to see what happened. We also pulled the rear handrails off the J during one trip from a tangled rope, but that is another story!

What has this to do with CMR operations? Well, when a train pushes or impacts with a loco there can be a serious jack-knifing of the couplers. This lateral displacement by force also has a lateral component and if the couplers are bogie mounted this causes derailments by trying to rotate the bogie off the track. This is a typical L over V situation on the lead wagon. CMR has recognised such by trying to place passengers to the front of the lead wagon. However, this is not enough to prevent a derailment.



A ~ This flange will climb! BUT
 (B ~ can lose vertical load & climb faster.)

For CMR operations there can be a light run-in as the loco driver throttles back, a medium run-in by brake application to slow down or stop and finally the maximum for a loco with locked wheels and is skidding or worse if derailed. This final event of skidding takes about 300kg of push. Now we come to the coupler angling from jackknifing in compression, in real life big trains with body mounted couplers this is about 7degrees whereas at CMR this can be 20degrees or more with current designs bogie mounted. A following article will explain how couplers are designed to work. Another CMR engineer has under-taken some calculations for L over V for different run-ins with comparisons between bogie mounted couplers and body mounting.

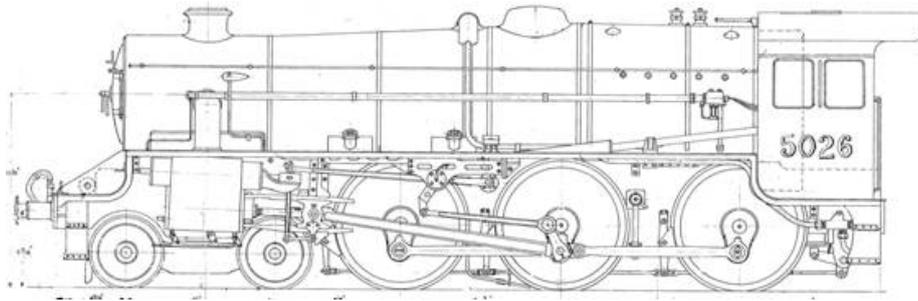
Body mounted couplers working within their design boundaries for various scenarios have a max L/V ratio of 0.8 and generally range 0.2 to 0.4. This is quite safe. The results for bogie-mounted couplers angled up to 20degrees had a minimum of 1.0 and a maximum exceeding 3.0. This is un-safe.

The big difference is because body mounted couplers cause the lateral force to go through the bogie centre pin and push the bogie sideways evenly and the wheel-sets accept this force between them. For bogie-mounted couplers, the bogie acts like a very very short wheel-based wagon and the result is trying to twist the bogie off the track. Hence there is a movement within CMR to get away from bogie-mounted couplers. This is also another wise decision.

In the future, in Part 3 of this series we shall talk about couplers and how they are designed to operate and particularly why the "fixed" link (also known as the D link) with Yoke couplers should have slotted holes. You may think about this yourself! Then there will be bogies and the do nots and what should be done and thus what you should consider when building your own.

FOOT NOTE If you find the above a little difficult to understand just imagine a very short wheel-based bogie where the two wheel-sets have merged to be one. If this single axled bogie were fitted with couplers then any forcing of the coupler sideways would rotate this wheel-set off the rails very easily. Now increase the wheelbase and it becomes a bit more difficult until you end up with a 2 axled wagon. Modern 2 axled wagons have wheelbases up to 10m long and travel at quite high speeds, but that is another story!

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Notice Board

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Reason for sale, failing strength and health! Buyer collects.

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4, Glenelg Way, Mandurah.

Telephone: 9582 0334. Cliff Pole

Price: \$25,000.00

For Sale – CMR DVD and CMR logo sew-on patches

Don Bowyer was commissioned to put together a CMR DVD depicting our history as well as some current footage. He has done an extremely professional job and the first batch of DVDs sold out quickly. A second batch is now on sale and can be purchased from the Canteen at \$5 each.

CMR logo sew-on patches are also available from the Canteen at \$5 each.

Private Parties

Please note that Private parties, held on Public run days, MUST operate from the designated station of the day.

Security

Members are reminded not to leave valuables on display in parked cars. Vehicles parked on the top car park have been broken into.

MESSAGE FROM THE EDITOR

Please do not forget to advise the editor if you change your email address, or home address. This will ensure that you always receive your Cinders and Soot notification, or 'snail mail' copy. Thank you.

If you wish to contribute an article to Cinders and Soot, please note that the closing date is the 15th of each month. Please send your contributions to Trish Stuart at the email address on the page 2.

Thank you to all those who have submitted articles in recent months, our readers have told me that they appreciate them – keep them coming.

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