

Friends of Darlington Railway Centre and Museum

# Newsletter

Spring 2014

Free

**The A.P.T. From a Different Slant**



**Rails Over the Monaro**

**Steam in and around Darlington**

**Two Forgotten Darlington Branch-Lines**

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### Introduction

I have had some favourable comments about the last Newsletter which is gratifying but it was a long time coming. In an attempt to preserve some momentum work on this issue began before the last was back from the printers.

The good news is you finally get to read about Andrew Everett's talk *Rails Over the Monaro*. The bad news is that it is yet another report written by me. I do not think anyone monopolizing the Newsletter is a good thing, especially me- it must wear on anyone who does not like my style and perhaps makes it unrepresentative. It also slows production since I am not a facile writer. For these reasons *Rails Over the Monaro* was "bumped" from the last issue. The endurance testing APT write-up is also mine but Bill Ferguson and Richard Wimbury stepped in for the others. The next issue, I warn you now, will be written very slowly unless anyone volunteers to work from my recordings and notes. (Seriously- if you want to volunteer e-mail me!)

Those of you who keep an eye on the website will have noticed that Rob Langham was briefly listed as a speaker due to a misunderstanding. I hope his opening feature, written especially for the Newsletter, will make up for any disappointment.

Tim Ruffle, Editor

**Front Cover:** The experimental Advanced Passenger Train (APT-E now at Locomotion) demonstrating its tilt mechanism and yes- the photographer did survive. The train was actually motionless and tilted manually to its fullest extent for the photo'. *Furnished by Kit Spackman (page 25).*

### Contacts

If you have material for the newsletter, be it an article, photo' or a short anecdote to fill the last few lines on a page, do send it- it might not get in but it will be considered. Information and announcements for members may well end up here and on the website, which I also look after, but such things should be sent to the Committee.

I much prefer to be contacted by e-mail, especially if it saves me some typing, but you can reach me by post. Note that, In a desperate attempt to be organized, the web-site has its own e-mail address. Material for both can go to either address as long as that is clear.

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# Feature:

## The NER and Darlington go to War

*Rob Langham is a member of NERA and living history enthusiast. His article is based on research for his recent book The North Eastern Railway in the First World War. Illustrations are from issues of the NER's own magazine in Rob's Collection.*

Of all the North Eastern Railway locations affected by the First World War, Darlington was certainly one of the most interesting- not least because it was the home of the North Eastern Railway's National Projectile Factory. Following the failure of the Battle of Neuve Chapelle in early 1915, the Ministry of Munitions was created to deal with the massive demand for artillery, and the shells to feed them with, something the existing armaments factories in the UK at the time simply did not have the capability to do. Eric Campbell Geddes, Deputy General Manager of the NER, was chosen to be the Deputy Director General of Munitions Supply upon its creation and, in September 1915, Chief Mechanical Engineer Vincent Raven left for Woolwich Arsenal to supervise the enormous works there (and whilst there would hire four NER 0-4-0T shunters, and fifty NER wagons).

As well as expanding the existing factories, new ones would need to be created, and the Government decided with the North Eastern Railway to build a National Projectile Factory on the NER's North Road Works site. The building was built by the Government, but run by the North Eastern Railway, with a deal struck so that after the war the building and machinery inside would be transferred to the NER. As a National Projectile Factory, it was designed to produce the bodies of the shells- in Darlington's case 18 pounder shrapnel, 18 pounder high explosive, and six inch howitzer high explosive as well as four inch naval practice shot. The actual filling of the shells with explosive material would be done elsewhere, at National Filling Factories. Although the most dangerous roles of male and female munitions workers during the war were those working at the National Filling Factories, the work at the Darlington 'Shell Shop' (as it is commonly referred to) was still



The North Eastern Railway run National Projectile Factory at North Road Works in 1916.

more than capable of injuring or killing its operator- heavy, fast moving machinery with little or no safety equipment could easily tear a part of the body off.

The Shell Shop opened in late 1915 and worked through to the end of the war employing around 1,000 women and 150 men, working in one of three eight hour shifts, enabling twenty-four hour working. It wasn't all hard work for the 'munitionettes'- in common with other North Eastern Railway women's social activities (including Ladies branches of the North Eastern Railway Rifle Club), the female munitions workers had their own football team- known at various times as the 'Darlington Munionettes', 'NER Munionettes', 'Darlington Railway Athletic' and others.

In total, 1,064,665 18 pounder shrapnel shell casings were produced by the Shell Shop during the war, 428,435 18 pounder high explosive shells, 134,876 six inch high explosive shells and 20,000 four inch naval practice shot. The brass cartridge cases of the 18 pounder and 4.5 inch howitzer shells were recycled for re-use at Darlington too- just under two million 18 pounder cartridge cases, and over 250,000 4.5inch howitzer cartridge cases being repaired here. At least one of the six inch high explosive shells survives to this day- it is on display at 'Head of Steam' and provides a fantastic reminder of the vital work done by the men and women of the North Eastern Railway's own munitions works. Two 18 pounder cartridge cases survive too, in my own collection- they are stamped with E.R.Y on the base, and will be on display at Head of Steam later in the year as part of the First World War exhibition.

Aside from the Shell Shop, elsewhere at North Road Works there were items of military equipment being produced. Fifteen gun carriages were built for the early eight inch howitzers- slightly basic in construction, as they used cut-down and bored-out redundant six inch naval gun barrels, and had no recoil, but they provided essential heavy artillery support in 1915 and 1916 until more modern equipment became available. Twenty-nine gun carriages were also built for the long range six inch guns- again, using redundant naval gun barrels (but with no conversion) and no recoil system, but vital to the war effort at the time they were produced. Carriages and base plates were built for ten inch bomb throwers, designed for anti-U boat work and mounted on warships, carriages for four inch naval gun mountings, plate racers and pedestals for anti-aircraft guns, rifle parts, axle trees for howitzers, and other miscellaneous equipment.

Locomotives continued to be built at Darlington throughout the war- a batch of E1 Class 0-6-0T's were under construction, the last one being finished in September 1914. The only type to be built throughout the war was the Z1 Class 'Atlantic' express passenger locomotives- ten were built in 1914, twelve in 1915, two in 1916, four in 1917 and one in 1918. As well as these, following the entire stock of fifty T1 Class 0-8-0 locomotives going to France in early 1917 for work with the Railway Operating Division, materials were allotted to the North Eastern Railway to build forty replacements. These replacements were of the T2 Class 0-8-0's, the first one, 2213, leaving Darlington in April 1917. Nineteen T2's were built in 1917, followed by eight in 1918, and the remaining thirteen in 1919. One of the T2's built in 1918, 2238, is preserved today by the North Eastern Locomotive Preservation Group. (All the T1's survived ROD service but none was preserved.)

One of the greatest visible changes on the North Eastern Railway during the war was the massive influx of female staff into the workforce to replace men who had left for the armed forces. There were 1,470 women working on the NER at the outbreak of war, and this shot up to just under eight thousand by the end of the war- not including the 1,000 employed at any one time at the Shell Shop. They worked as platform porters, locomotive cleaners, number takers and carriage cleaners as well as other roles. One of the interesting roles undertaken was that of visiting families and other dependents of men who had left the NER to serve, to ascertain if there had been any change in circumstances of the men who had left which would affect the lives of those left behind- especially with regards to being wounded or killed. By May 1918 there was one woman at Darlington

employed in this role. A case recorded on the North Eastern Railway in May 1918 was of a married man who had left the Railway without permission which meant he would not have his job guaranteed to be held open for him upon his return and that his family were not eligible for any supplementary allowance from the Railway, or anything from the NER's Relief Fund if he was killed. Unfortunately he was killed in action, leaving a widow and four children however, despite the warning before he left the railway, they were still given a grant from the Relief Fund.

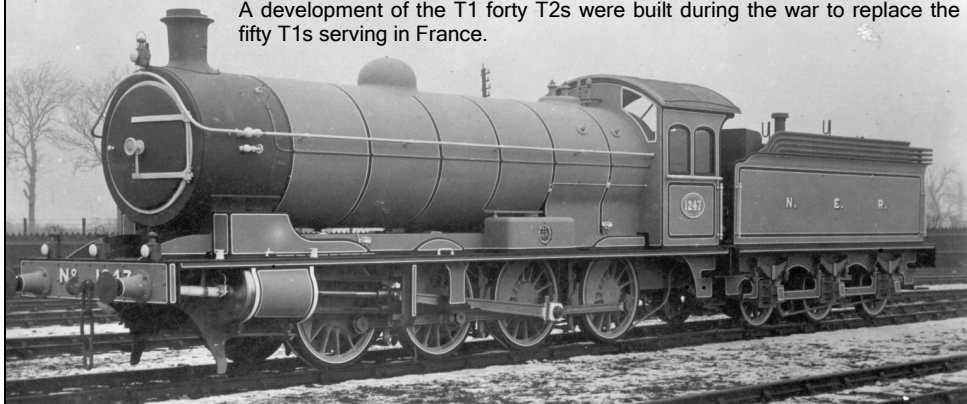
After the war ended, the female workers of the North Eastern Railway gradually left as the men returned. Men who had received injuries during the war which prevented them from returning to their original jobs were found, where possible, light work- on the entire railway, around five hundred men were found lighter work. The NER itself was to stay under the control of the Railway Executive Committee, as it, and all other main British railway companies, had done since the outbreak of war, until the grouping of 1 January 1923 when it ceased to exist. Fortunately there are still reminders of the great work done on the NER during the war and by the men that left- most notably, the NER's War Memorial to the 2,236 men who never would return, adjacent to the 1906 Headquarters of the railway in York, and built by Sir Edwin Lutyens, who also built the Cenotaph in London.

*Rob will be speaking on his subject in the region soon. On Saturday 5 April he will be at NERA's York meeting at the Bar Convent, 17 Blossom Street- an all-day meeting with Rob's talk starting at 10:30. At 8pm on 21 April he will speak to the Western Front Association, Tyneside ([www.westernfrontassociation.com/tyneside](http://www.westernfrontassociation.com/tyneside)) at the Allotment Social Club, North Terrace, Newcastle. He may be speaking in Teesside but that had not been determined by deadline. Rob's Facebook page is [.../thenortheasternrailwayinworldwarone](https://www.facebook.com/thenortheasternrailwayinworldwarone). The North Eastern Railway in World War One (ISBN 978-1-78155-081-6) is published by Fonthill Media in hardback and electronic editions.*



A Worsdell T1 (LNER Q5) in 1919 still in ROD livery after serving on the Western Front.

Raven T2 (LNER Q6) 1247, the first of 120, brand new and spotless in 1913.\*  
A development of the T1 forty T2s were built during the war to replace the fifty T1s serving in France.

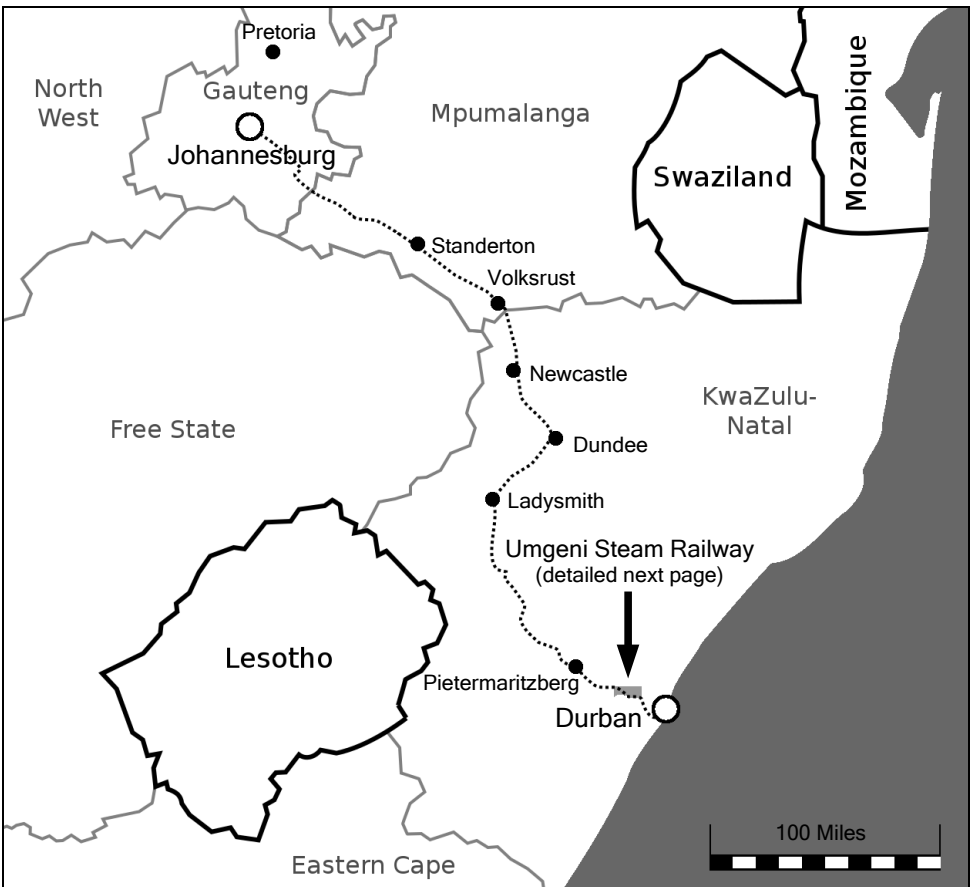


# FEATURE:

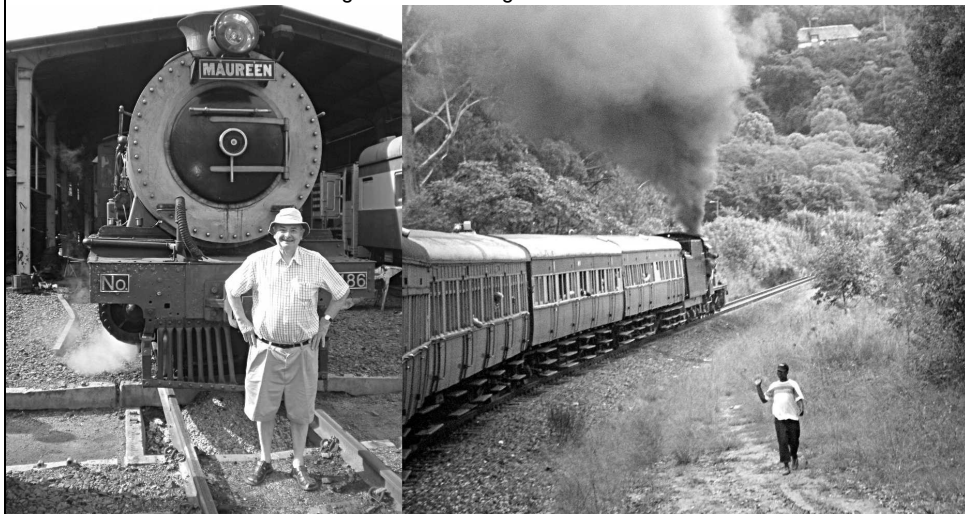
## Flirting with Maureen

**Tony Clamp**, a member of the Friends, describes his steamy 2011 holiday romance with a Scottish ex-pat' he met in South Africa. All photo's by the author.

The Umgeni Steam Railway is a preservation organisation set up in 1982 which operates a section of the old 3'6" gauge Natal Government Railway main line from Durban to Johannesburg. The preserved section covers the spectacular Valley of a Thousand Hills where the line enters the mountains and climbs on its way to Pietermaritzburg running from Kloof 22.5 miles to Inchanga over 2,000ft above sea-level. Trains negotiate 1:30 gradients, some of the steepest in South Africa, and 90m radius curves. Its tortuous course is necessitated by some tortuous topography with major engineering challenges along the way including a pass with almost sheer cliffs at "Third World Corner" between Padleys and Botha's Hill. By opting for this roller-coaster route the NGR completely avoided the expense of tunnelling... almost. Just to the east of Drummond a tunnel of 165 feet length (more of which anon), built 1880, overlooks the Valley of a Thousand Hills with its captivating landscape stretching as far back into history as steam can carry you. Even today the line is considered something of an engineering feat.



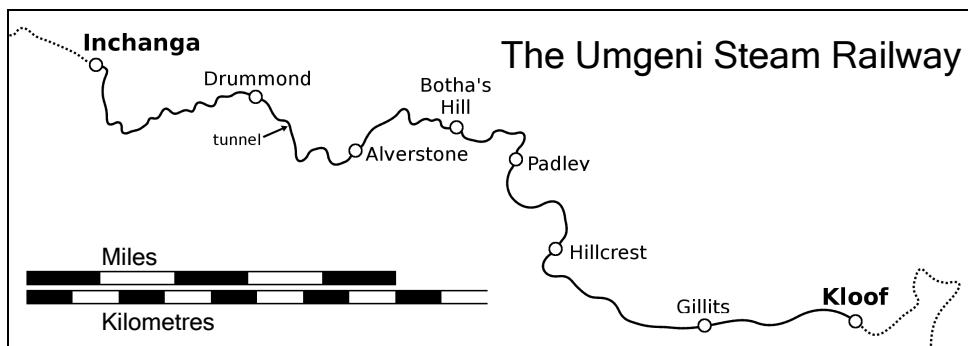
*Maureen* and an admirer at Inchanga shed. Strutting her stuff on the climb from Kloof.



Inchanga is a colonial station much reduced in size from its days serving the main line but it is now the location for the USR's sheds and workshops where engines are housed and repaired. There is no turntable though which was going to make things interesting. The USR owns approximately 20 locomotives, 50 coaches and a variety of goods wagons but the track, which is in quite poor condition, remains in the hands of the state railway company Transnet.

Number 1486 *Maureen* is a 4-8-2 coal-fired steam engine, one of ten class 3B locomotives (becoming 3BR after reboiling) built to order by the North British Railway Company at its Atlas Works in Glasgow to an NGR design. South African Railways accepted delivery in 1912 having taken over the colonial railways including the NGR. She is the oldest locomotive in regular service in South Africa running once a month and is very much at home having been made for service on the upper section of the NGR's main line. Even weighing in at all but 80 tons *Maureen* is able to haul only five coaches on the line because of the heavy burden of the hills.

I was able to ride the Umgeni Steam Railway in April 2011 and what an enjoyable experience it was. The five coaches were each about 100 years old. I was in the oldest one- a wooden clerestory type built in Birmingham in 1908. This coach has an old out of service kitchen and a rear riding platform. On the Sunday of my ride, there were two other



*Maureen* simmering at Inchanga.



Brits along for the super experience. All of us were made extremely welcome by the Railway staff a number of whom are very well acquainted with all our many preserved lines in the UK and have ridden on the major ones over here.

Now for the flirting. It came in two stages. Like all flirting, it starts in an innocent way and then becomes more intense as things progress and responses are received! Stage one, was the key opportunity. We Brits were given the ride on the open platform of the rear carriage as *Maureen* hauled us up from Kloof to Inchanga and we could imbibe all the smells, smoke and motion and have super views over the gorgeous very hilly countryside. As the name suggests the Thousand Hills is very undulating with too many hills and dales to number, extremely picturesque and most scenic.

As mentioned Inchanga has no turntable so *Maureen* ran round the five carriages to couple up with her smoke-box very adjacent to our previously rear riding platform. A distance of some three feet from carriage platform to smoke-box door and perhaps four



Looking forward to the return journey. The white shirt might have been a bad idea.



Up close and personal and the view on the way back to Kloof. Apparently all that stuff coming out of the chimney is very good for a bad chest. If you don't have a bad chest when you set off...



and a half feet from platform to smoke chimney exit. What was the end portion was now right bang up to a very hot boiler. Our hosts made us an offer with a warning. Did we wish to ride next to *Maureen*, and particularly fry in a very hot oven when we went through the steep section which includes Drummond Tunnel? We were warned that the ride was incredible, shaky, smokey but with excellent views of the hills, etc. and that the tunnel in particular would be an experience and a half. The answer was obvious. Nowhere else in the Western World would such a once in a lifetime opportunity be offered. So we each said Yes please!! The second stage of intense flirting was about to begin...

Off we went and puffed along gently and then *Maureen* began to puff and pant and make warm gestures as we commenced the hill climbs again. We did enjoy the very close intimate experience, rolling and jerking together. We then rose up to Drummond tunnel and a new experience commenced. *Maureen* panted loudly and we entered the tunnel. Immediately it became all very dark and the temperature on the riding platform shot up intensely as all the dissipating heat from *Maureen's* boiler was reflected from the tunnel's brickwork and our temperatures rose from comfortably warm to seemingly boiling point. At the same time, we commenced to choke as all the smoke from the emitting chimney immediately surrounded us. We were covered from head to toe in black smuts and ash. Clearly *Maureen* had had enough of our flirting and gave us a pretty strong negative message, namely back off! This negative experience lasted for only three to four minutes whilst we engaged with Drummond. When we emerged *Maureen* was happy to pick up the flirting from where we had left off.

After a journey time of around one hour, our intimate experience was over and we arrived back at Kloof where a good shower and clean up was called for. What is all this Health and Safety stuff I hear of in the UK? This is real safe exhilarating fun. Does *Maureen* have any sisters I wonder, that I can try flirting with? I must ask...

*The USR's website is [www.umgenisteamrailway.co.za](http://www.umgenisteamrailway.co.za). Inchanga Station is home to the Inchanga Railway Museum- [www.inchangarailwaymuseum.info](http://www.inchangarailwaymuseum.info). One 3BR was withdrawn and scrapped in 1973. The rest retired from South African Railways in the '70s as Diesels were introduced and found employment in industry. One is stored at Millsite Locomotive Depot, another is in the care of the South African National Railway and Steam Museum whilst others may be on static display. It seems Maureen does have sisters but they might not show you such a good time!*

# TALK:

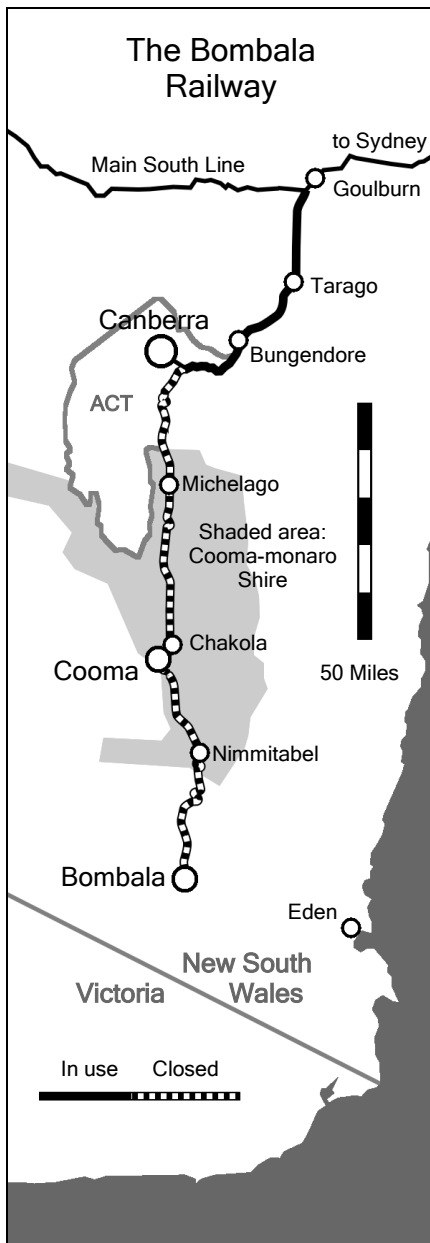
## Rails Over the Monaro 10 January 2013

**Andrew Everett MA** has been a guest of the Friends before. He described the Bombala Line- a 186 mile branch(!) in Australia. Report Tim Ruffle. Pictures by permission of the the Friends of the Bombala Railway (FoBR) and Cooma Monaro Railway (CMR).

The line first attracted Andrew's attention when he visited his son in who lives Cooma, New South Wales. With just over 6,000 residents it is the largest town in the Monaro region also known as Cooma-monaro Shire. The town is over 2,600ft above sea level nestling east of the Snowy Mountains at the northern end of the "Australian Alps" themselves part of the Great Dividing Range that runs down Australia's entire east coast. In fact the whole region is a relatively flat and low-lying area of the Great Dividing Range. The Snowy's include Australia's highest peak Mount Kosciuszko (7,310ft or 2,228m pronounced "Kos-ee-os-co" if you are Australian or "Koz-shoo-sko" if you are Polish- it was named by a Polish explorer after a national hero). The range also has all of New South Wales' ski resorts and Snowy Hydro- a vast hydro-electric and water management scheme that has its headquarters in the town. Monaro and Cooma are both derived from Aboriginal words Monaro meaning "plain" and *Coombah* "big lake" or "open country".

Cooma declared itself a municipality in 1879 but remained isolated, farmers in the area particularly suffering from poor access to Sydney- the main market in New South Wales. Their best option was to ship stock from the whaling port Eden which is on the wrong side of the Kybayan Mountains. The town petitioned for a railway branching from the Great Southern line which had reached Goulburn, already about half the distance from Sydney. This tallied with a policy encouraging settlement and was approved with £184,000 set aside for construction. (The Great Southern Line, now the Main South Line eventually, ran from Sydney over 400 miles to Albury on the border with Victoria to connect with the Irish standard-gauge line to Melbourne. The whole route is now standard gauge.)

The route is roughly south-west for the best part of 60 miles taking it towards Queanbeyan, now on the outskirts of Canberra in the Australian Capital Territory (the ACT was established in



1911 and the line now defines some of its eastern border), before continuing almost due south for about 70 miles to Cooma. The line opened in stages to Tarago (January 1884), Bungendore (March 1885), Queanbeyan (September 1887), Michelago (December 1887) and was completed to Cooma in May 1889.

The Cooma Railway was one of John Whitton's Pioneer lines built conscientiously but to accommodate light axle-loads and low speeds and followed contours to avoid large scale civil engineering for the most part. Where bridges were necessary across the many, often dry but occasionally ferocious, creeks and rivers on the plain, they were built entirely from timber including the pegs holding them together. Australia's climate and lack of destructive mold and fauna allows such structures to almost petrify where they stand lasting far longer than they would almost anywhere else. The larger stations are built using a system of standard concrete modules developed by Whitton.

The railway cut journey times from days to hours carrying livestock and crops from all over the south-eastern corner of New South Wales and bringing in materials, consumer goods and new settlers as the colony developed. From 1910 it brought tourists to the Snowy Mountains and was extended south through less accommodating terrain. A 62 mile extension was built in two stages meandering to Nimmitabel in 1912 and finally Bombala in 1921 some 47 miles south of Cooma and 300ft lower. Bombala (the Aboriginal derivation is from "meeting of the waters" and the area is a haven for the duck-billed platypus) is within 20 miles of the Victoria border. Hopes of extending the line to link up with Victorian Railways at Orbost a further 70 miles south-west soon faded. A five mile branch to the new capital opened in 1924 from Queanbeyan.

Apart from becoming known as the Bombala Line little was done to update or upgrade the railway. Services were always run by older locomotives and, later, multiple units and rail-buses. Cooma and Bombala had turntables and well equipped loco' maintenance

### John Whitton (1820-1898)

Whitton was born in Wakefield and had considerable experience as a railway engineer when, in 1856, he emigrated to New South Wales which boasted barely 20 miles of track in the Sydney area on which ran four locomotives, twelve coaches and forty wagons. Appointed Engineer in Charge Whitton immediately advised the NSW Legislature to convert the fledgeling network to Irish standard-gauge to match lines being built in other colonies but they did not care to think so far ahead. (Oddly enough the other colonies were following the lead of the Sydney Railway Company which began construction under the Irish engineer Francis Webb-Shields. He had resigned when his pay was cut and his successor, the Scot James Wallace, favoured standard-gauge.)

For the same reason Whitton was against building narrow-gauge lines into the Blue Mountains west of Sydney, as recommended by a select committee, even suspending surveys to undermine the proposal. He further endeared himself to politicians by opposing cut-price measures such as wooden rails and horse-drawn stock to extend the network and denouncing the Legislature's uncritical acceptance of the cheapest tenders for railway construction. Some or all of this may have led to him being accused of fraud in 1865 but the charges were soon proved groundless.

He expanded the network in and around Sydney and tackled the Blue Mountains himself opening a standard-gauge line in 1876 which zig-zagged up and down them (the zig-zags are now bypassed by extensive tunnelling although the western one has become a tourist railway). Although against penny-pinching he was not profligate and was happy to build cheaper "Pioneer" lines across easier terrain away from the mountains. Shortcomings in the commission and administration of railways came to light in the 1880s but a royal commission into railway bridges cleared Whitton of poor design and using inferior materials. The subsequent shake-up made his position more secure.

He retired in 1890 shortly after the Hawkesbury River Bridge opened completing the rail link between Brisbane and Adelaide- he had argued in favour of adequate finance for it. Whitton had overseen the construction of nearly 2,200 miles of track in New South Wales and Victoria including much of the Great Southern line (now the Main South line) and the 513 miles Main Western line to Bourke including the Blue Mountains line. Not a single accident had occurred on all that mileage that could be attributed to poor design or construction. He revisited England in 1892 but died in Mittagong, half way between Sydney and Goulburn, and is buried in North Sydney.



"Railway Day" at Bombala-  
9 December 1921.

This wooden arch was built for the sole purpose of parading through on opening day.

*Photo: FoBR.*

sheds owing to the distances from other facilities and, since return journeys could not be completed in a single shift, both had rest houses for crews to stay during tours. Uniquely Bombala has a footbridge crossing the whole station precinct. The line was never quite profitable in its own right but it brought trains carrying touring exhibitions, farming advice and even dental services. In the 50's when the newly founded Snowy Mountain Hydro-electric Authority, now Snowy Hydro, began its construction work in Kosciuszko National Park the line carried plant and material. Cooma saw the last recorded use of a "pay-bus" on 1 April, 1986. These four wheeled units acted as travelling wage offices for workers at remote stations and crossings all over NSW. Six were ordered in 1967 to replace an older fleet but a seventh vehicle, FP13, was added to the production run specifically for the Bombala line with seating for use as a rail-bus on services between Bombala and Cooma where its top speed was limited to 39mph (its journey, with eight intermediate stops, took over four hours each way). FP13 was converted to a pay-bus in 1980.

In September 1988 the bridge over the Numeralla River just north of Chakola ("Lyre-bird") suffered flood damage. Apart from services to Canberra passenger trains past Queanbeyan ceased immediately with freight stopping the following May. A steam special ran to Cooma a few weeks later but took the precaution of off-loading its passengers before crossing the Numeralla bridge. In April 1993 the section from Queanbeyan just over 30 miles to Michelago was opened for heritage trains run by the Australian Railway Historical Society but, with only basic maintenance, the useful length of track shrank until 2007 when operations ceased entirely due to further storm damage. No effort has been made to re-open past Queanbeyan junction in spite of occasional sparks of interest most recently fanned by the prospect of mineral traffic from new mining operations near Cooma. The Monaro Highway shadows the whole line quite closely and must be a reason for its abandonment. Since closure the highway has been re-aligned impinging on the trackbed in places otherwise the track is largely undisturbed.

Cooma and Bombala stations remain largely intact although Bombala has long since lost its maintenance shed. The Cooma Monaro Railway began operations in December 1998 on the 10.5 miles between Cooma and Chakola using locally restored CPH class railmotors, "tin hares", around 90 years old (such vehicles are a mainstay of several NSW



Freight arriving at the newly opened Bombala Station by bullock cart.

*Photo: FoBR.*

One of the CMR's Railmotors draws the eye on the Monaro plain. *Photo' Martin Bennet, CMR.*



heritage lines) and is restoring '60s pay-bus FP11. Storm damage halted running recently. The Friends of the Bombala Railway has collected some rolling stock but its initial aim is to restore the station site, a project expected to take about six years, before it even considers operations although a one-off run to Cooma was on the cards until the CMR's tribulations. The network operated section of the line now hosts a monthly steam special on the 17.5 miles between Queanbeyan and Bungendore. Goulburn Roundhouse is devoted to heritage traction exhibiting steam and Diesel locomotives. The only regular freight trains on the line carry refuse to a green energy plant at Tarago. The scenery and potential tourist custom has encouraged talk of routing a new high-speed Sydney-Melbourne line through the area but that is unlikely- high-speed rail is barely getting started in Australia with road or air travel favoured for long journeys.

The Cooma Monaro Railway's website is [cmrailway.org.au](http://cmrailway.org.au). The Friends of the Bombala Railway have a Facebook page. Goulburn Loco Roundhouse Preservation Society's website is [www.roundhouse.org.au](http://www.roundhouse.org.au). Much information about all NSW railways can be found at [www.nswrail.net](http://www.nswrail.net) including detailed mileages (kilometreages..?). Repeated thanks to the Friends of the Bombala Railway and Cooma Monaro Railway for use of their photographs and FoBR Chairman Allen Simpson and CMR Webmaster Phil O'Regan for their notes.



A Railmotor at Chakola, the CMR's northern terminus. The destructive Numeralla River crosses the background. The derelict ramp was for loading sheep. *Photo' Martin Bennet, CMR.*

*David Corfield is Vice Chairman of the North Eastern Railway Association (NERA) and began the talk with a description of the organization. Report Bill Ferguson.*

The North Eastern Railway Association was founded in 1961 by a group of enthusiasts, including Ken Hoole, its aim to study and make known the history of railways in North East England. That is mainly the NER and its predecessors but includes small independent and industrial railways as well as the Hull and Barnsley Railway, the only contemporary non-NER company of any size in the region which it absorbed shortly before grouping.

NERA gathers information about routes, rolling-stock and locomotives but also studies auxiliary operations such as shipping and road fleets, infrastructure such as signalling and staffing at all levels. It holds talks, symposia and events throughout the year in the North-East and London and has backed the publishing of many books, most recently *The North Eastern Railway in the First World War* by NERA member Rob Langham (see page 3).

The Association has a membership of over 700 in the UK and world-wide with which it communicates via a quarterly magazine the *North Eastern Express* now numbering over 200 issues making up over 50 annual volumes. Until recently its archive was in the Museum but it has grown to such an extent that NERA now leases the upper floor of 2 MacNay Street, the Old Goods Agent's Office, on the North Road site but it still complements, and in some cases shares material with, the Ken Hoole Study Centre. It has drawn upon its archive to curate several exhibitions at Darlington Railway Museum including Forgotten Darlington Branch Lines contemporary with this talk.

The Association's regular talks and meetings are open to all comers free of charge. Its archive is available to researchers by appointment and is in the process of being digitized with on-line access via [www.ner.org.uk](http://www.ner.org.uk) in development. NERA's 2014 meetings, exhibitions and talks are listed on its own website as you would expect with those at the Museum included in its own programme and noted in the Diary section starting on page 38.

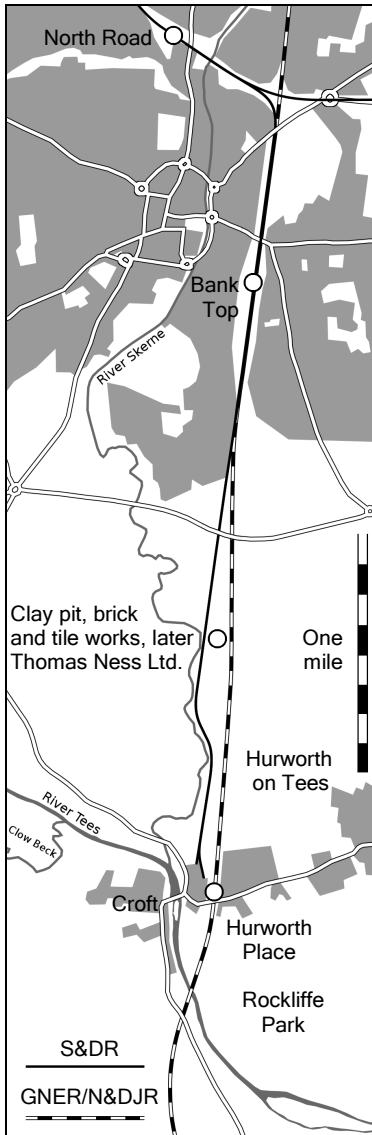
*David introduced the Association's Archivist **Robin Coulthard** who was the main speaker and described two local branch lines established under very different circumstances but which shared a similar fate.*

The Stockton and Darlington Railway's Croft Depot Branch ran from a junction with the S&DR at Hill House (aka Hill Top) just north of Bank Top to Croft Bridge, a distance of 3.5 miles. The purpose of the line was to convey coal from south west Durham collieries to users in North Yorkshire, a coal depot being set up near Croft Bridge for this purpose cannily avoiding the expense of bridging the Tees. The estimated cost of construction was £74,000- a similar sum to but, forty years earlier, much more in real terms than the penny-pinching Merrybent and Darlington Railway which was considerably longer and did cross the Tees. Like the Yarm and Black Boy branches the S&DR had already opened, it was entirely horse worked.

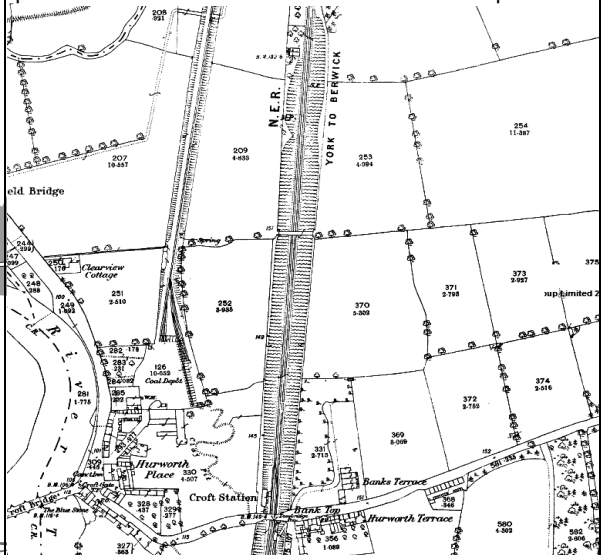
The line opened on October 27, 1829 with considerable fanfare (see Chris Lloyd's account in the last issue). A passenger service began in September 1833 but soon fizzled out. William Walton began running passenger coaches again in February 1837 on a one year licence but the Great North of England Railway's main line from York to Newcastle was granted its Act of Parliament that July. It was clear that much traffic would be lost so the S&DR sold the line to the GNER in 1839 for £20,000. The northern part was absorbed by the main line but the southern part, just over half, was unaffected and continued to operate from Parkgate Junction (the NER later built Polam Junction in the same area). Croft Spa, the main line station, opened on 31 March, 1841 and, if Croft Depot's passenger service had not already ceased, it certainly did then.

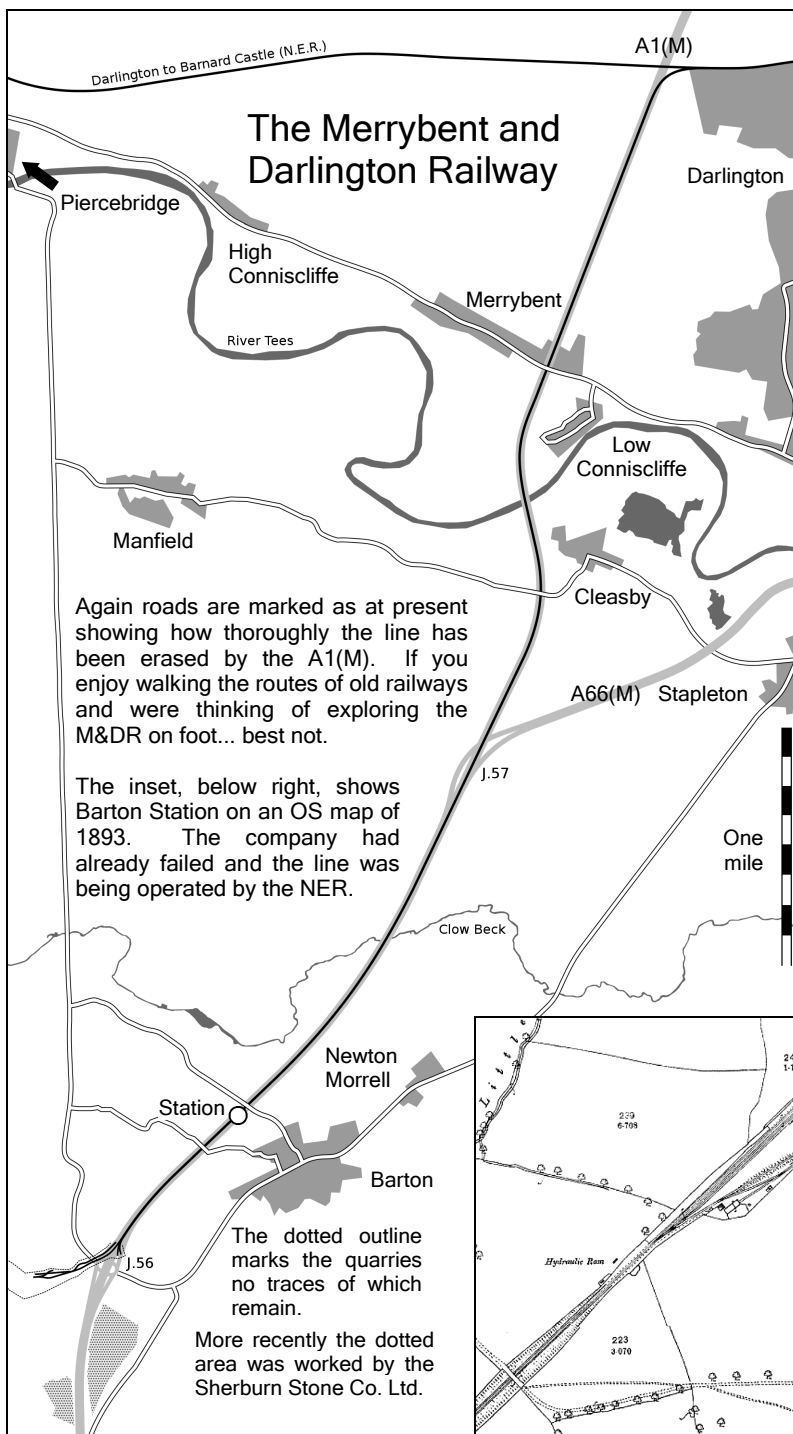
Apart from that Croft Depot Branch was goods only primarily carrying coal but a clay-pit with a brick and tile works attached at Black Banks had a siding. By the 1890's Thomas Ness Limited's chemical works occupied the site bringing in tar from Darlington Gas-Works and dispatching products such as sheep dip by rail until the late 50's. A curious feature, or lack of feature, was that the line never had a run-round loop- no problem if your locomotive is a Suffolk Punch but, when steam took over, all freight was propelled towards Croft.

The line closed on 27 April, 1964. The depot site is now under houses but a footpath follows the route for some distance to the north. There is



The map on the left shows roads etc. in their current positions. The detail below is from an 1895 OS map.







a more detailed account of the Croft Branch in the *North Eastern Express* (number 195, August 2009). A model railway layout based on the depot has pages on [scalefour.org](http://scalefour.org) and Facebook.

The Merrybent and Darlington Railway was the other forgotten branch illustrated by vintage photos and some taken in the 1950s. It ran from the Darlington to Barnard Castle Line through Merrybent to Barton. Goods only apart from a single passenger train celebrating its opening, strictly against regulations, it's original purpose was to exploit the traces of copper, silver and lead in the rock but this proved uneconomic and it switched to moving limestone from Merrybent and Melsonby quarries hoping to supply local blast furnaces. The line was short (about six miles including the mile or so from the station on to the quarries) and the company had a short history opening the line in 1870 and folding in 1878. It suffered from being under-capitalised, mismanaged and constructed on the cheap which was particularly evinced by the Tees bridge- so lightly built that the line had a route availability of only three. In contrast to this parsimony the substantial station house at Barton cost an estimated £527.

The suppliers of ironstone generally regarded limestone as part of their market offering preferential prices or simply insisting that customers buy both from them. This made the market difficult to break into for the M&DR contributing to the company's quick demise. Public auction of it's assets failed to raise any bids and it was eventually bought by the NER in 1890 although the sale was not ratified until 1900 which suggests a certain lack of enthusiasm.

There was some interesting detail of the viaduct over the Tees and some excellent photos of the locomotives used to haul limestone from the quarries which boasted their own engine sheds.

Limestone extraction from Barton continued until 1946 and the line closed in 1950. The line was finally demolished in 1952 to make way for the A1(M) which is significantly wider than the single track Merrybent Railway and follows it's route unerringly. The trackbed of the Darlington to Barnard Castle line east of the A1(M) appears on maps as a footpath called Newton Lane. The path curves south where it meets the motorway and that curve is the site of the junction and the start of the M&DR's exchange loops. It is the only visible trace of the Merrybent and Darlington Railway.



Newton Lane footpath, formerly the Darlington to Barnard Castle Line, crosses the top of this picture. The curve, giving access to the A1(M) and the farm road, is the only visible sign of the M&DR.

# TALK:

## Steam in and around Darlington 4 April 2013

*Chris Nettleton is Secretary of the Gresley Society and a regular speaker to the Friends. He presented a nostalgic collection of film and photographs only a few of which can be shown here. Report Richard Wimbury. All photo's Chris Nettleton. Chris did not or could not comment on the finished item. Expect caption corrections in the online edition.*

Chris had a wide selection of pictures which he showed us- some were stills, others movies; the majority black and white but a fair number were in colour; many had been taken by Chris but other photographers were represented; and the timescale ranged from the 1920's to the mid 1960's.

Bank Top Station, with its yards to the north and south, was well represented. There were shots of Saltburn locals, main line expresses as well as goods traffic- and a wide variety of locos; some from Neville Hill, Gateshead and other visitors in Darlington to be overhauled at the works. The A4 Pacifics featured, including "Mallard", and at the other end of the scale industrial saddle tanks on shunting duties. There were also pictures of the crack expresses "Queen of Scots" and "Silver Jubilee". It was also interesting to see features of the Darlington townscape that have now been lost to redevelopment, such as



Heavy freight at Middlesbrough. Q6 63360 formerly NER 1288 built at Darlington in 1913 and withdrawn in 1966. *Below:* WD 2-8-0 90500 was cut up at Darlington in 1963.



A3 Pacific 60045, *Lemberg*.



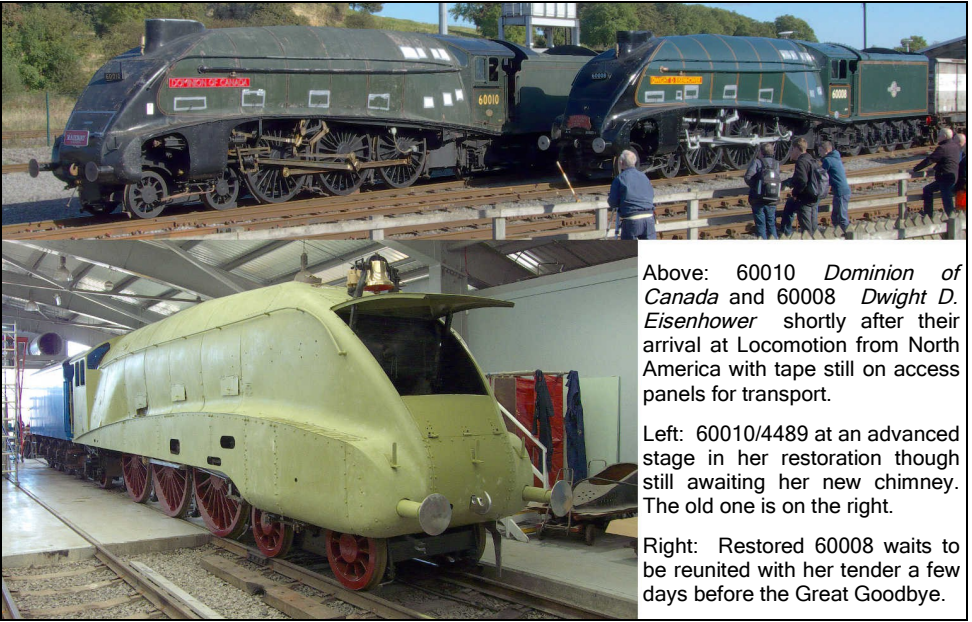
lines of terrace houses backing on to the railway track, the power station cooling towers and a cluster of pre-fabs (so widespread in the immediate post-war years). We also saw a photo of “Locomotion” and “Derwent” on their plinths inside Bank Top.

We then moved on to Eaglescliffe (evidently famous for its station bar, which remained open later than the local public house) and Thornaby. There were shots of expresses diverted from the ECML (A4's again), locals, enthusiasts' specials and many pictures from the nearby Teesside yards- shots of BR moguls and of Thornaby roundhouse, the last steam roundhouse to be built in Europe in 1958. Then on to

**continued on page 22**



The frost on the telegraph wires lies undisturbed on a still, clear and cold day that allows for a particularly impressive show from this Q6 (the Editor thinks but he's from the Western Region so...).



# A4s The Great Goodbye

Text and photo's Tim Ruffle.



The loco's were always lined up rather haphazardly making it difficult to get a good photograph of them all. This is the best of a bad lot from early on the afternoon of the 18th though it does give a good impression of the crowds. From left to right are: 4489 *Dominion of Canada* (with *Flying*





The Great Goodbye event, almost certainly the last chance to see all remaining Gresley A4 Pacifics together, ran from Saturday 15 to Sunday 23 February at Locomotion. Weather was mostly dull or dull and wet but there was little impression that that put people off. An estimated 120,000 visitors vastly exceeded the predicted attendance of 70,000 and fell little short of the numbers that attended The Great Gathering at York last year. The three “runners” were in light steam throughout the event and all took turns in charge of the brake-van rides at weekends.

The cosmetically restored North American locomotives looked splendid *Eisenhower* still in BR green as she was when withdrawn, though in manifestly better condition than on her arrival in 2012, and *Canada* as almost new in LNER garter-blue with valences and single chimney restored and her Canadian Pacific Railroad bell replaced. Both will remain at Locomotion until April before returning to their adoptive countries. The others departed under their own steam over the three days after the event beginning with *Union of South Africa* which took *Mallard* with her back to York on the Monday.



Scotsman headboard), 60007 Sir Nigel Gresley (*The Night Scotsman*), 60008 Dwight D. Eisenhower (*The Queen of Scots*), 60009 Union of South Africa (*The Caledonian*), 4464 Bittern (*National Railway Museum Shildon*) and 4468 Mallard (which had carried a *Great Gathering* headboard earlier).

Riddles WD ST (LNER J94), 68043 formerly of Longmoor, ended her days allocated to Darlington.



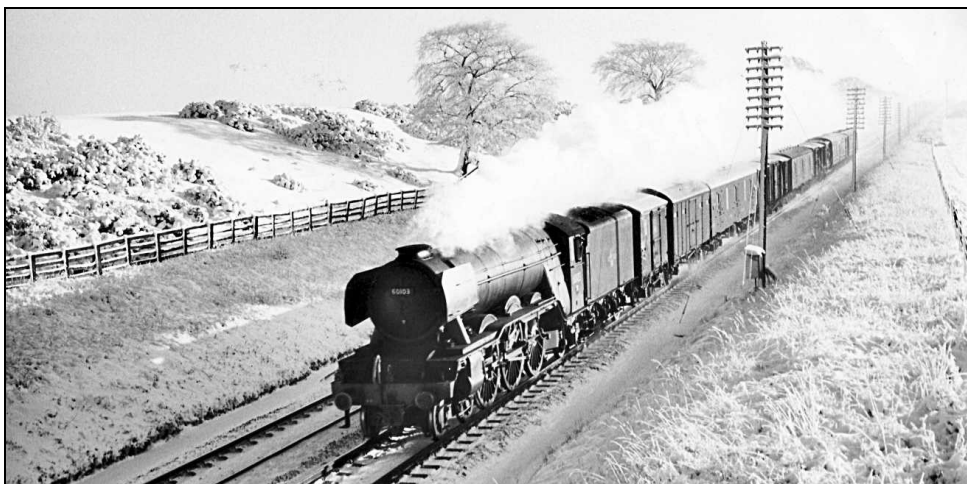
Middlesbrough and Saltburn where we saw a picture of an inspection train with the inspection saloon (from the 1950's) which also showed the now-demolished Saltburn brine baths. We also saw a pick-up freight ambling through Nunthorpe.

Then to the south of Darlington with pictures dating from the 1920's up to the 60's- Raven Pacifics heading south, an Atlantic steaming through Croft Spa, expresses at Eryholme hauled by "Sir Nigel Gresley", "Flying Scotsman" and "Union of South Africa" as well as a Merchant Navy class visitor on an enthusiasts' special. An Atlantic as well as "Silver Fox" were shown at Cowton and there were shots of locos picking up water at the troughs just north of Northallerton. Then back to the north end of Bank Top with shots of

A crowded but not desperately busy scene at Whitby- A8 class 4-6-2T 69861's last shed allocation.



Darlington built Gresley K4 *The Great Marquess* is familiar today in BR Black numbered 61994. In LNER Apple Green numbered 3442 she hauls an Ian Allan rail-tour that, typically, looks far too big for her.



An A3 Pacific, 60103, performs menial duty in another atmospheric snow scene. *Below:* The same locomotive restored to LNER Apple Green as number 4472. That might ring a bell...



BR Standards 3/1, 77003 shedded at Darlington and 4/2, 76049 from Gateshead on an RCTS tour visiting the Stainmoor Line the day it closed.



V2's and K1's and an 0-6-0 saddle tank on shunting duties. The vast expanse of track and associated signal gantries were noted- all now gone. Visitors snapped included a Schools class on a railtour, ex-L&Y locos from Halifax, and a Midland 2P 4-4-0. Shots of the exterior of North Road works showed locos lined up for scrapping as well as others being repaired.

We then had a quick tour round the network to the west of Darlington, with shots of West Auckland, Lartington, Deepdale and Belah viaducts, Tebay and also the double-header over Stainmore on the last day of operation in January 1962. Chris had spoken to a "full house" and the audience showed its appreciation enthusiastically.



A sorry site for any admirers of Clan Line Pacifics. 72000 *Clan Buchanan* (nearest to camera), 72003 *Clan Fraser* (centre) and an unidentified sister await the cutter's torch at Darlington in 1963. 72000 had been withdrawn on the eleventh anniversary of her introduction, 72003's career was even shorter.



# TALK:

## The Advanced Passenger Train from a Different Slant. 2 May 2013

**Kit Spackman** developed the tilt system for the experimental Advanced Passenger Train- the E-Train" at Locomotion not the "P-Trains" that entered service. He is now involved with the APT-E support group. Report Tim Ruffle, pictures furnished by Kit Spackman unless attributed.

Everyone has heard of the Advanced Passenger Train. Everyone knows it was a white elephant- a waste of time and hundreds of millions of pounds. Everyone reading this should know that that is cobblers, especially if they attended Kit Spackman's entertaining account of its development, but if you do labour under such a delusion it is hoped that this report will set you straight. The story actually began with a look at freight (below).

BR was much concerned with speed in the late '60s particularly on the West Coast Main Line. Reducing journey times was a sure way of attracting passengers lost to domestic flights and the motorways so BR initiated the Advanced Passenger Train project. The aim was to increase top service speeds about 50% to 155mph with speed on curves increased by up to 40%. Without new lines to run on the APT would require imaginative solutions to obstacles other countries simply crushed under enormous amounts of money. To this end Dr. Alan Wickens' team at the Derby Research Division included engineers with little experience of railways to work in isolation from the in-house Engineering Department. Hopefully they would bring new ideas and technologies from their fields and apply them to the project unfettered by preconceptions. Data from HSFV-1 ensured a safe smooth ride at high speed and speed itself was largely a matter of power but the APT would have to maintain its speed through relatively tight curves without causing great stress to the track and stop within the same signalling distances as the trains it shared the lines with. There would be three phases to the project each developing trains- Experimental, Prototype and Service or Squadron.

The need to take curves at speed comfortably led to the APT's most famous feature the tilt system which was Kit Spackman's department. Tilting trains had been tried, notably in Japan and Italy, with mixed results- the Japanese system worked but allowed only slightly faster speeds which did not justify the expense. The Italian train, the Pendolino, more-or-less swung

### The HSFVs

In the '60s faster, fully braked freight trains became more common but so did the number of wagon derailments caused by speed. The standard suspension for four-wheel wagons had changed little since the previous century relying on leaf-springs for vertical damping and little but blind faith to control lateral movement. Dr. Alan Wickens of the BR Research Division at the Railway Technical Centre (RTC) investigated the problem testing new suspension and wheel profiles. The first fruits of this research was High Speed Freight Vehicle 1 (HSFV-1) which had coil springs and vertical and lateral hydraulic dampers further developed to the long-wheelbase HSFV-4.

HSFV-1 was tested at 140mph on rollers and 100mph on the main line entirely successfully at a time when freight trains seldom topped 40mph. The systems were regarded as too expensive and fragile for everyday use on freight (production systems were developed in the '70s on vehicles built

at Shildon known as HSFV-5) but the research and testing was, and remains, fundamental to high-speed rail, both passenger and freight, all over the world.

HSFV-1 in particular was an important step in the APT's development (and the class 14x Pacers by the way- jokes are left as an exercise for the reader).

HSFV-1 with an APT-P behind.



The POP-Train in its original skeletal form with under-performing swing arm bogies and the cross-section emphasized.



from side to side as it went through curves which was sound in theory but nauseating in practice. The APT was to have an active tilt system that measured the centrifugal effect of a curve and rotated the vehicle around a roughly central axis. Aluminium construction, contributed by aircraft engineers in the design team, and articulation would keep the weight down reducing track forces. Hydro-kinetic (HK) brakes, that worked against hydraulic fluid in the axles, would slow the train from speeds that would destroy friction systems although a friction brake was required once speed dropped to 25mph and the HK brakes lost pressure. Though little remarked upon these brakes were just as important to the APT as the tilt system.

### What was the problem?

The modern railway was invented in Britain which helps explain why the APT was given such a hard time in the court of public opinion. It is sometimes compared, usually disparagingly, to the French TGV and Japanese Bullet Trains with which it is roughly contemporary and surely the country that pioneered rail travel should be able to keep up with foreign railways- right?

In fact Britain's early adoption of railways is part of the problem that the APT was intended to cope with. The most important part of the TGV (built after SNCF gave up trying to develop its own tilting train) is the completely new network the trains run on. The Bullet Trains also owe their speed to the Shinkansen network- Japan's first standard gauge railways. Both new networks were devoted to the high speed services and built as level as possible with large minimum radii.

BR did not have the political or financial support for new main lines- if it wanted to run high-speed trains they would have to share the oldest railway in the world, built when three-figure speeds were inconceivable, with all other traffic. For the most part, top speeds were much the same as they had been in steam days although Diesel and electric traction and better braking had increased average speeds. Improvements could be made to the track- continuously welded rail gave wheels a surer footing as well as a smoother ride. Curves were re-aligned and super-elevation could be altered to some extent but, on a line in general use, banking has to strike a medium for all traffic. Super-elevation also does nothing to reduce track forces- a train taking a curve inevitably applies lateral force to the track which increases with speed by turn requiring increased maintenance.

Victorian railway engineers were well aware that straight and level was better so some main lines, the ECML and parts of the Western Region, "Brunel's Billiard Table" in particular, bore speed increases as the performance of conventional trains improved. The WCML was a different matter- curved, hilly and the busiest main line in Britain.

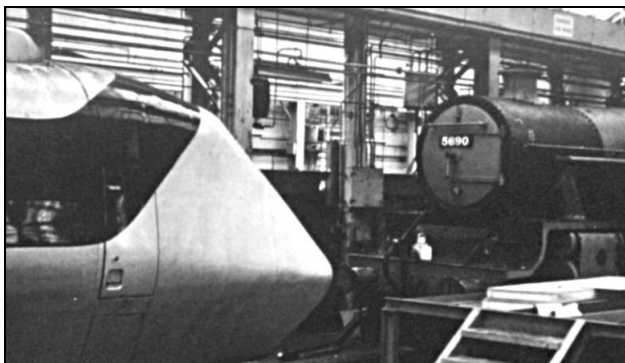
The new E-train. The open panel in the nose gave access to draw gear. The protrusion just above the lights that looks like a lamp bracket is a lamp-bracket. This removable fitting met the requirement that the train be able to carry an oil lamp although no-one recalls it ever having done so.



In 1971 the "P0P-Train" began tests. It had two articulated skeletal vehicles that introduced the distinctive cross-section necessary to keep it within the tight British loading gauge when tilted. Although unpowered it was ballasted to emulate two APT-E power cars, the shells of which were already under construction, back to back- P0P stood for power-zero-power referring to this. It had a tilt system that could lean the maximum of nine degrees in one second and HK brakes. Initial tests proved that the hydraulic pump powering the tilt system was woefully inadequate and tiny particles in the oil wore the tilt hydraulics badly- sampling and filtering systems developed to counter this remain industry standard. More worryingly the swinging arm bogies were unstable at 47mph. The pump was replaced and bogies redesigned for further tests behind a Class 47 geared for 115mph on the ECML where the practice was to allow Deltic drawn expresses to get ahead until the next train was almost due then chase them down gathering high-speed data before slowing again to rebuild the gap. During a pause on one of these test runs a passenger boarded with the avowed intention of riding to Newcastle having heard it was fast. He was not put off by the obvious lack of seats, or for that matter body panelling, but an abrupt demonstration of the tilt mechanism changed his mind and hastened his disembarkation.

The P0P-Train test results informed the construction of the APT-E or E-Train, E being for Experimental. It was to bring together everything that had been learnt and the systems under development into a self contained unit with weight, ride characteristics and performance similar to the proposed trains. The trailers (TC1 and TC2) were built by English Electric alongside Lightning interceptors while, perhaps less aptly, the power-car bodies (PC1 and PC2) were built by Metro-Cammell- better known for DMUs and EMUs including those for the Newcastle Metro. The power cars have doors to the cab only while the trailers lack them altogether with access via joint modules over the trailing bogies. The cabs have a distinctly dish-faced look thanks to their small windscreens inset at a steeper angle than the rest of the nose. At the time the builders could fit a windscreen that was large or strong but not both since glass that would stand the expected stresses was simply unavailable.

Two traction motors, high geared but otherwise identical to those used in the Class 37, drove each cab-end bogie. Nose suspended much of their weight was unsprung. Power was provided by ten Rover 2S/350 gas-turbines each generating about 300hp. Five were mounted in each power car but, at first, only four were used to propel the train with the fifth delivering auxiliary power and heating the air-intakes. The exhaust was carried clear of the immediate airflow by



At her first rebuild at Derby in 1973 sharing the shed with LMS 5P 3690 *Leander*. They were out-shopped on the same day.

stacks on the power-car roofs. APT-E was just as much a test-bed as the P0P train, built to be rebuilt at intervals as tests progressed and systems were refined. It was crammed full of experimental modules that could be replaced as anyone who has explored the unit when it is open to the public at Locomotion can attest although a small passenger cabin, called the VIP Department, was added during one of the rebuilds. Like the P0P-Train the tilt was inherently unstable- without power to the system it would roll to one side or other to rest against stops.

On the first main line run Kit was determined that at least a trailer would tilt and one was able to but, in the end, tilting was not permitted. The test, from Derby to Duffield on 25 July 1972, only ran at 45mph anyway thanks to the unsatisfactory swing arm bogies with Kit on the floor in one of the joint modules monitoring the ride. Afterwards the E-Train was blacked by ASLEF as

## APT-E GT-4

Gas-turbines have a high power output for their weight and size, hence their use in the APT-E and prototype TGV, and are efficient at full power when the intake compressor is also being driven flat-out. When the turbine slows though so does the compressor, pressure and temperature in the combustion chamber drop with a drastic loss of thermal efficiency and an *increase* in fuel consumption. The E-Train's engines would burn even more fuel idling than at full speed. Apart from North America, where mountainous terrain requiring prolonged running at full power justified some gas-turbine locomotives, their use has been largely confined to test units.

APT-E was the fourth use of gas-turbine power on British Railways. Two GT-Electrics, A1A-A1A 18000 from Brown, Bovari and C0-C0 18100 from Metropolitan Vickers, had been ordered by the GWR in the '40s but were delivered to BR in 1949 and 1951 respectively. Both had turbines rated at around 3,000hp in comparison with the LMS twin C0-C0s 10000 and 10001 with 1,600hp engines- no more powerful than a class five steam loco' though weighing 132 tons (more than either WR machine). GT-3 (for Gas-Turbine Three) was built on spec' by English Electric and accepted for testing by BR in 1961. With a 4-6-0 wheel arrangement, tender (housing the fuel tank) and central cab it looked like a class five designed by Oliver Bulleid on an off day. Its 2,750hp turbine drove the six-coupled driving wheels via a mechanical transmission.

None was a success. The heavy fuel-oil 18000 used wore the turbine blades whilst 18100 burned costly aviation kerosene and neither ran their turbines constantly at full load so fuel consumption was heavy. 18000 was withdrawn in 1960 and returned to Europe to be rebuilt as a Diesel for use in wheel/rail tests then sat on display in Vienna before being brought back to UK. She is at Didcot Railway Centre owned by the Pete Waterman Trust. 18100 was returned to Metro-Vick in 1958 and rebuilt as a prototype 25kV electric E1000 to run tests on the newly electrified WCML but stored in 1961 with the introduction of production loco's, officially withdrawn in 1968 (late enough to be classified TOPS Class 80) and scrapped in 1972. GT-3 might have been more advanced and efficient in spite of her appearance but had the shortest career of the lot. BR already favoured Diesel and electric traction and she was returned to EE in 1962 and scrapped in 1966.

In spite of the drawbacks both electric and gas-turbine APT Service trains were considered. A production train would have used a single large turbine. Advancing technology and prolonged running at high speeds would have done much to improve efficiency but the oil crisis in the '70s put a swift end to the idea.

*Left:* Testing at Old Dalby. This curve had track force sensors and could be realigned for different tests. The aim with the APT was to cause no more stress at full speed than a Deltic at 100mph.  
*Right:* In three-car form on the main line with oil-lamp bracket in evidence again.



was the prototype HST. Both were built with a single driving position and the unions insisted that 100mph running required two driving crew. Testing, on both the main line and the Old Dalby test track, was halted for over a year. Since the P0P-Train was still being tested work could continue but when, as a result of those tests, the E-Train was driven to her first rebuild by an inspector ASLEF called a national one day strike. The cost to BR vastly exceeded the entire APT budget.

The first rebuild at Derby saw the swing arm bogies replaced as they had been on the P0P-Train. Diesel engines were installed to generate auxiliary power making all ten gas-turbines available for propulsion. The freed turbines and their associated generators were moved from the connecting ends of the power-cars to a central position and mounted as mass-dampeners to improve riding. At this point the turbines lost their heated air-intakes, which had made them more efficient but sapped power, increasing unit output to about 350hp at the cost of spectacular fuel consumption. The units in the E-Train now consumed around 1.5 gallons of fuel per mile (yes- that is the right way round), roughly the same as a Deltic... each!

When APT-E was outshopped in August 1973 the unions were mollified and high speed testing could begin in earnest at Old Dalby and on the network. Reliability could be an issue but that is the nature, and indeed part of the purpose, of test units and it was hardly worse than the test track's resident workhorse- a Class 17 "Clayton" that caught fire so often that it went almost unremarked. Track forces were measured and tilt failure tests carried out with the train leaning in the wrong direction on curves making for a memorable ride.

Fast main line testing began in the Western Region. The gas-turbines worked best in cool conditions so tests began at 5am necessitating a 1am start. It became apparent that the E-Train would not achieve 155mph but it did set a British record for a non-electric train (that still stands) of 152.3mph on 10 August 1975 between Swindon and Reading. This was a determined effort to push the E-Train to the limit and achieved in spite of the controls on one of the gas-turbines having failed. An engineer controlled it manually following instructions relayed from the cab.

More significant were a series of trials a couple of months later. The 99.1 mile stretch from St. Pancras to Leicester was chosen with a target journey time of less than an hour requiring a 100mph average speed. There were three attempts. On the first run a set of cab steps dropped open putting the train out of gauge demanding a stop. The second attempt was thwarted when a signalman routed a DMU through in front of it in spite of the test having priority under Special Notices. The third attempt on 3 October, the last opportunity, was nearly foiled before it started by the accompanying inspector who ordered the start as soon as they got a green light rather than letting the train ahead open up a gap as was usual practice. Departure was delayed when the inspector was conned into believing a minor fault developed but was, miraculously, traced and fixed just in time for an optimal start. The run was in marked contrast with experience on the



The E-Train and the team after her record setting run in August 1975. That is the prototype HST in the background.

Great Western billiard table but Leicester was reached in 58 minutes, 25 seconds. On exactly the sort of line she was built for and on a normal service day, albeit given priority over other traffic under Special Notice conditions, APT-E had achieved an average speed of 101.6mph and touched 136.7mph. The fastest scheduled trains today still take over an hour.

As the project approached the Prototype phase the tilt control was refined into a compact unit that could fit under the floor. For testing it was fitted to a coach built for the restricted-gauge Hastings Line, dubbed Lab-4, as well as the POP-Train which could be switched between it and the original as required. A faulty tilt system during a Lab-4 test run on the WCML left a mist of oil hanging in the air which was expelled from the train at around knee height just as it passed through a station crowded with commuters resulting in damages claims for ruined trousers and dissolved tights. It had been determined that nine degrees of tilt was unnecessary and the new system tilted to six so APT-E remains the furthest tilting train ever but, with the P-Trains on the drawing board and the new systems being tested elsewhere, it was out of a job and despatched to the National Railway Museum in 1976. It was an emotional departure for the team that built her but an equally significant moment for nine years old Paul Leadley who happened to be at the NRM when it arrived and developed an instant fascination for the APT.

One of the trailers was exhibited in the Museum for a while with a mechanism that could tilt it from side to side but its use was promptly nixed due to safety concerns. (To be fair the tilt was meant to make the moving train feel level not throw people around the cabin whilst stationary-the would be passenger who had been ejected from the POP-Train some years before comes to mind.) Instead of being preserved though most of the E-Train languished outside the NRM exposed to the elements which took their toll over the years. By the time the APT-E Support and Conservation Group was established in 2000 (by none other than Paul Leadley) the windows leaked and PC2 needed completely reskinning.

The restoration has been going on ever since following the E-Train when it was moved to Shildon for Locomotion's opening in 2004. Too decrepit to be moved by rail she travelled by low-



The E-Train's arrival at the National Railway Museum in 1976... or the day an alien spacecraft landed at York. For nine years old Paul Leadley the impression was much the same.

In a sorry state  
at York.



loaders but the NRM faced a problem with the power-cars which are the longest individual vehicles to be built for regular use on British Railways and would not fit under a bridge to leave the York site. They were coupled together and towed to another access point- their last rail journey to date on the network. The train is on display in two halves but, somehow, its components are not only in the wrong order (PC2-T1-T2-PC1) but the trailer cars are the wrong way round. She was not built to be remarshalled readily and the adjacent connections do not match so, with no way to turn the vehicles at Locomotion, the E-Train can not be assembled into a complete formation. The connections could be moved around in a railway workshop but it is no job for a few volunteers.

The Support Group not only works to restore the E-Train for display but to document the project and present a proper record of its considerable achievements. They must be doing something right since the E-Train attracted the attention of the Institute of Mechanical Engineers which presented its Engineering Heritage Award in May 2013. Previous recipients include Tower Bridge, the E-Type Jaguar and A4 Pacific *Mallard*. The award recognized the APT's contribution to the development of high speed rail travel not just in Britain today but all over the world as the world's first self-propelled active tilting train, the first train to have computer designed wheel-sets and active suspension and the first train to run at over 100 mph on any track without side-to-side instability. Not bad for a white elephant.



The first meeting of the APT-E Support and Conservation Group at York in April 2000 with Kit Spackman kneeling. Kit had found out about the group quite by chance and contacted Paul Leadley (right) who said it was like getting an e-mail from God.

## Where did it all go wrong?

The APT was a long term project to make a leap forward rather than an evolutionary step which disconcerted BR management. Its development, employing computer analysis and a systems based approach more in keeping with the aircraft industry rather than the traditional practice of building a prototype then fixing it for service, did little to reassure them or endear the team to BR's Engineering Department which had been handed oversight of the APT in 1973. Reluctant to put all their eggs in one hurtling, tilting basket the BR Board commissioned the Engineering Department to set up an in-house team to build a conventional High Speed Train for the ECML and Western lines. The Inter-City 125 was a triumph of course but it did keep experienced railway engineers from the APT which the project would have benefited from- not least to ease perceived friction between Dr. Wicken's team and the old hands. BREL was no more sympathetic. It was used to interpreting drawings and specifications to suit manufacture rather than following them slavishly, which was essential for the precisely designed APT, but resented being told how to build trains. In fairness problems on both sides would have been avoided by better relations, for instance a railway engineer would never have produced the P-Trains convoluted air pipes that allowed condensation to build up.

In any event specifications and designs were handed over to BREL for construction of prototype P-Trains. They had cabs for two drivers who sat behind a large flush windscreen glass production now being equal to the demands. Tilt system geometry was altered to settle level in the event of failure. Gone were the E-Train's joint modules with each intermediate trailer having a single door on either side at opposite ends. All trailers had passenger seating. The P-Trains were electrically powered by non-articulated central power-cars which, with no through access, effectively split the train in two requiring the duplication of facilities in each half. Two were needed to provide the target performance and driving motors at each end of the train would have been preferable but having two pantographs collecting current at speed would have caused problems with the catenary, two power cars sharing a pantograph at one end of the train would have caused worrying buckling forces when propelling twelve or more trailers and a 25kV line running the length of the train, though perfectly acceptable on the TGV, was ruled out by the British Railway Inspectorate leaving the builders little alternative. Each power-car had four body mounted 1,000hp traction motors driving an axle each through cardan shafts. The axles bore the substantial gearboxes needed to handle such power plus part of the weight of the shafts so the unsprung weight was reduced in comparison to the E-Train but not by much.



The E-Train next to the HST prototype- similarly startling in appearance but utterly conventional. The surviving HST prototype power-car is being restored ([www.125group.org.uk](http://www.125group.org.uk)).



Power-cars were built at Crewe, trailers assembled at Derby Carriage and Wagon Works from aluminium extrusions ordered from Al Suisse in Switzerland. Vehicles were built for three P-Trains with twelve trailers and two power cars- driving trailer, four articulated trailers and a semi-articulated “brake” that coupled to the two power-cars then brake, four trailers and driving trailer plus a spare driving trailer and brake. This 12+2 formation weighed less than 430 tons and, with 8,000hp on tap, was much the most powerful train to run in Britain. Performance was remarkable. Veteran driver Bill Andrew, a volunteer at Crewe Heritage Centre, recalls restarting from Scout Green half way up the 1:70 climb to Shap and having to slow for the 80mph speed limit at the summit. P-Train trials and tests began as soon as the first set was available in May 1979 and by the end of the year one of the units set a British rail speed record of 162.2mph but the P-Trains did not completed a proper test programme, exacerbated by the fact that the development team were kept away from them at first, before the BR Board, facing political pressure itself, committed the APT to service.

The first public run from Glasgow Central to London Euston started on the morning of 7 December 1981 and was blessedly flawless but you would not know that from press reports of widespread motion sickness. Kit had left BR but was aboard as a paying passenger and even he could hardly believe how smooth the ride was- as if the line had been straightened out. He notes that, having run down the Lune Valley at 137mph the complaints started only after sunrise when the tilting action became visible causing a conflict between the eyes and inner-ears of some- especially journalists who had spent the previous evening in a free bar. Few other passengers on the demonstration runs reported ill-effects. The lack of testing began to tell on the return journey when the tilt failed in some of the cars. Later runs were dogged by trouble one run being halted by a brakes failure caused by condensation in the air-pipes freezing. The bitterly cold weather also froze the catenary causing power fluctuations which contributed to problems. The P-Trains were withdrawn from service after only four days.

Testing continued, modifications were applied and, without a word to the media, the P-Trains were reintroduced on the WCML in 1984. A slight but inevitable delay in the tilt was rectified by linking the system in one car with the sensor in the car in front although this could not help the lead driving trailer and the tilt system performance was actually reduced. Passengers now felt some lateral forces on curves equating better with what they could see though the window. Three units could never cover a complete service but they ran regularly and reliably with one trip setting a London to Glasgow record of three hours and 52 minutes, in spite of a five minute delay due to signal failure, which still stands. In this respect, although delayed, the Prototype phase of the program was completed successfully but BR had lost heart. In 1985, again with minimum publicity, the P-Trains were withdrawn and scrapped. There was to be no third phase and no fleet of S-Trains. The APT was, to all appearances, dead.

For a failed project the APT was, and remains, remarkably influential. It contributed directly to the success of the HST, the aerodynamics influenced the Eurostar units and other advances, including the HK brakes and aluminium construction, have been key to rail development ever since not least because, with privatization approaching, BR had to seek tenders to supply new rolling stock and gave the data away as part of the brief. Then there were the S-Trains that supposedly never existed. During the early '80s design work had continued on a unit with a single driving power-car at one end,



A Trestol wagon rigged with P-Train power bogies, gearbox, tilt and HK brakes to test the pantograph's tilt-compensating mount. Right: This 4+2 formation weighed less than 270 tons. If both power-cars were working its performance would have been quite something.



The end of the line  
for one of the  
P-Trains

articulated coaches plus a driving trailer. An APT-U (for Update) was also on the drawing board with a power car at each end (concerns about two pantographs presumably having been addressed) and non-articulated coaches. The APT name had been forever tarnished by the media savaging so the APT-U became the Inter-City 225. The Class 91 locomotives with their push-pull sets of Mk-4 coaches and driving trailers fall somewhere between the APT-S and APT-U- they might not tilt but the Mk-4s were designed to do so while the Class 91 is an updated (non-tilting) APT power-car with a driving cab. One of these trains barely shaded the APT-P's British record in 1989 running DVT first and recording 162.6mph on Stoke Bank. That record has since been obliterated on HS-1.

Of course there are successful tilting trains. The privatization and break-up of British Rail and the mergers and divisions that have gone on since blurs their relationship to the APT but the part of BR that owned the tilt system was bought by ASEA, ultimately part of Bombardier which produced the Diesel-electric Class 221 Super Voyager used in Britain some of which currently run with the tilt disabled. Bombardier also produced the X2000 for Sweden (also tested in China) and the LRC for Canada which some of the APT team worked on.

Fiat-Ferroviaria's Pendolino system, since bought by Alstom, has little other than the name in common with its swinging, lunch-launching predecessor. Like most if not all current high speed trains, they undoubtedly benefit from the data gathered by the project but, although Alstom bought the vehicle manufacturing arm of BR, the Pendolino's active tilt system is not derived from that of the APT. Pendolino Trains are in use in much of Europe and Britain in the form of the Class 390 units which run with tilt enabled from Manchester and Birmingham to London. The fastest scheduled journey between London and Glasgow is time-tabled to four hours, ten minutes- the same as the APT in 1981.

Following privatization of the RTC HSFV-1 fell into the hands of Serco which donated it to the APT-E Support Group in 2010. It is being restored at the Electric Railway Museum in Coventry for display at Locomotion. HSFV-4 is undergoing restoration at the Eden Valley Railway. The P0P-Train continued to run tests being rebuilt at intervals and gaining body panels and a third vehicle (the prototype APT-P trailer). With the demise of the APT project it was scrapped in 1985. Half a P-Train is on display at Crewe Heritage Centre after cosmetic restoration. The APT-E Support Group's website is [www.apt-e.org](http://www.apt-e.org) (ignore Java errors). Crewe Heritage Centre has no website but its friends do: [www.fochc.co.uk](http://www.fochc.co.uk). [www.apt-p.com](http://www.apt-p.com) is devoted to the APT-P believe it or not. The history of Old Dalby test-track is described at [www.old-dalby.com](http://www.old-dalby.com) with photo's and video footage. The last two sites in particular include several interesting links.



A Class 91 at Peterborough and Class 221 Super Voyager at Durham. Neither would exist without the APT. Pictures from Wikipedia used under the terms of the Wikipedia Commons licence.

### North Eastern Railways in World War One

The Museum has been awarded a £42,300 grant from the Heritage Lottery Fund for its year long North Eastern Railways in World War One project involving Museum staff and volunteers.

The project, which has its own page on the Museum's website linked from the Home page, will comb the Museum's archive digitizing wartime records for the first time. The aim is to conserve the records themselves and create and maintain a comprehensive picture of the NER's railway workers who joined up to fight in the Great War. The research will be available to everyone with on-line access planned and activities developed for schools. You can learn more about the project at St. Mark's Church, North Road on Wednesday, 9 April (10:30-12:30) and there will be further events details of which will be announced as they become available.

Family records and reminiscences would also be useful. To offer your own memories or volunteer for the project, which will require some training, call museum curator Leona White-Hannant, on 01325 734125. The grant is part of the HLF's Understanding World War One initiative ([www.hlf.org](http://www.hlf.org)).

### New Friends

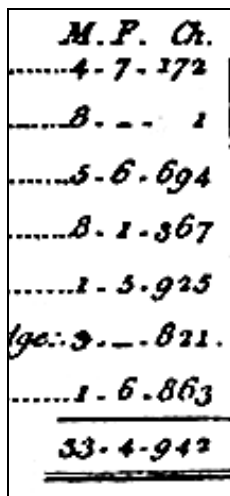
At the AGM on April 3 volunteers to join the meagre Committee were notable by their absence. In light of this, and the effort that will clearly be required to support the Museum in the coming months, a couple of new members have been parachuted in from outside the Friends. This news item has been shoe-horned in at the last minute so please forgive its brevity and lack of detail. No doubt there will be more in the next Newsletter and on the website.

### Any Ideas?

Chris Lloyd and I are puzzling over a detail in his talk Rockcliffe and the Railways (last issue). Describing the canal scheme of 1767 he mentioned a branch to Croft "three miles, 821 chains long". No-one noticed at the time but, reading it through for the Newsletter, it occurred that 821 chains is over 10¼ miles. The lengths of each section of the canal are listed on the complete plan in miles, furlongs and, apparently, chains (right) but most stretches measure hundreds of chains which makes no sense at all.

My ha'p'orth: the digitized plan is fairly low resolution making some of the text unclear- the last digit in the total has suffered for instance but seems to be a partial three. Could what looks like "Ch" actually be "Cli" for Chain-link? There are 100 links to a chain and, therefore, 1,000 to a furlong. Vexatiously, even if this is the case, the figures still do not make sense unless whoever totted them up for the plan made a mistake or I did- if so I made the same mistake several times but it would be possible to misread a figure consistently. I make the Ch/Cli column total 3,843- if that is links it would be three furlongs, 843 links and the furlongs and miles columns then add up correctly.

I have suggested this to Chris but neither of us is entirely convinced and I fudged things for the Newsletter changing the description to "three miles or so". If anyone has a plausible explanation we would both like to hear it and I will pass on any thoughts. *Editor.*



M.P.	Ch.	fms.
4-7-172		
8- - - 1		
5-6-694		
8-1-367		
1-3-925		
1-3-821		
1-6-863		
33-4-942		

### The Data Protection Act (Reprise)

The last issue included notes about the Data Protection Act, what personal information the Friends holds about members (names, contact details and membership expiry basically) and responsibilities concerning the information and the way it is used. This issue marks a change in the way that information is handled. Posted copies used to go out addressed with a label printed by former Membership Secretary Vic Branfoot and I had a few addresses on file for new members and those who had moved. Those labels have now run out and, since it is quicker and simpler to print on the envelopes, June Palmer will be sending me the addresses as a file henceforth. This should make no difference to you but you ought to know what is going on.

## E-mail Addresses

If you are a member of the Friends the Committee would like your e-mail address. There are any number of reasons why it may be desirable to contact members- to get the word out about a late change to the talks programme for instance. Addresses would not be sold to spammers or passed on indiscriminately. If you have gone on-line since joining the Friends or believe we do not have your e-mail address for some other reason please take a moment to contact the Membership Secretary (membership@friendsofdrcom.org) or Chairman (chairman@friendsofdrcom.org).

## Railway Lines

David Urion e-mailed out of the blue to tell the Friends about his new book of poetry *In Praise of Rails*. There is no room for all of the press release but there are 50 poems, "...delving into and celebrating the social fabric and factual history of Britain's railway heritage" from an award-winning poet and creative writing tutor. If you are interested you can sample David's output at his website davidleslieurion.wordpress.com. If you are still interested you can buy a copy from Createspace.com quoting 3XDM69GF for a discount before the end of May. There are print and electronic editions.

## Correction

Colin Foster spotted the inaccurate caption on page 23 last issue. The LNER Y/D post marks the boundary between areas overseen by York and Darlington engineering departments not the county border. This was clear in Richard Barber's talk but became over simplified and conflated with information about another photo' as the captions were being composed- wrong in other words.

The captions were entered as place-holders in the expectation that Richard would proof-read the item but he was unable to do so before it went to the printers and they were not revised. He has since pointed out that the GN(no E)R Atlantics on the front cover were photographed by Ken Cockerill.

## Rail Tours in the Region

This information is taken from [www.uksteam.info](http://www.uksteam.info), [www.railtourinfo.co.uk](http://www.railtourinfo.co.uk) (now that it has its act together) and the various rail tour operators own websites. No locomotive movements are listed- although websites do list some movements they tend not to be arranged as far ahead as tours and are much more subject to change. This list is not claimed to be comprehensive and, although the information here is repeated in good faith, you are advised to check nearer the time. How much information there is available about rail-tours varies greatly from operator to operator.

Saturday 12 April. The A1 Steam Trust's (A1ST) *White Rose* will run from King's Cross to York and return behind A1 60163 *Tornado*. York a.12:45, d.17:15

Saturday 12 April. 52A Tours' *Deltic Aberdonian* will run from York to Aberdeen and return behind 55002 *The King's Own Yorkshire Light Infantry*. Times listed are stops.

York 06:40, Darlington 07:15, Newcastle n.07:50, s.20:15, Darlington 20:50, York 21:30

Saturday 12 April. Compass Tours' (CT) *White Rose Express* will run from Hereford to Scarborough stopping at York topped and tailed by Class 57s. Times for York are vague ("around" 12:00 and 17:00) and for Scarborough non-existent but it's about an hour between there and York.

Saturday 19 April. The Princess Margaret Rose Trust's (PMRT) *North Eastern* will run from Leicester to Newcastle and return stopping at York, Durham and Newcastle with LMS Princess Coronation class 46233 *Duchess of Sutherland* in charge north of Derby.

York 10:02, Durham 11:09. Newcastle a.11:59, d.15:47, Durham 16:16, York 18:06

Sunday 4 May. The Edinburgh to Kings Cross leg of the RTC's *Great Britain VII* tour will run behind A4 Pacific 60009 *Union of South Africa* to York where 46233 will take over. No timings are listed.

Monday 5 May. Pathfinder Tours' (PT) *Forth Scot* will run from Crewe behind a Class 67 to York where Deltic 55009/D9009 *Alycidon* will take over north via the Stockton and Blyth-Tyne loops to Edinburgh Waverley then around the Kingdom of Fife before returning to York and Crewe. The only timings in our region are York 8:20 and 21:00.

Wednesday 7 May. CT's *Heart of Wales Scenic Rambler* will run from Darlington to Cardiff Central and return topped and tailed by Class 57s. Times listed are stops.

Darlington 05:45, Northallerton 06:05, York s.06:35, n.22:40, Northallerton 23:20, Darlington 23:40

Saturday 10 May. PT's *York, Moors and Scarborough Explorer* will run from Hereford to Scarborough and return topped and tailed by Class 47s. Pathfinder's website is cagey about timings but York is "approx. 11:00 and 17:00" and Scarborough "approx. 12:00 and 16:00".

Saturday 10 May. The RTC's *Hadrian 2* will run north from Kings Cross leaving the ECML at Low Fell to tour the Tyne Valley Line to Carlisle returning to York via the S&C and the Aire Valley line then return to Kings Cross. Electric 86259 *Lee Ross* will be in charge between Kings Cross and York while 60009 will take the tour around the loop.

York 10:35, Carlisle a.13:50, d.15:30, York 19:00

Monday 12 May. The forth day of UK Railtours' (UKR) *Cock of the North* will run from Edinburgh to Kings Cross behind a Class 67. No timings listed.

Monday 12 May. SD's *Cathedrals Explorer* will run from Fort William to Durham behind LMS Class 5s 44871 and 45407 *Lancashire Fusilier* and, on Saturday 17, from Durham to Kings Cross in the care of 60009. No timings are listed.

Friday 16 May. Steam SD's *Cathedrals Explorer* will run from Fort William to Durham behind 44871 and 45407 and, on Saturday 17, from Durham to Kings Cross in the care of 60009. No timings are listed.

Saturday 17 May. West Coast Railways' (WCR) *Scarborough Steam Special* will run from Skegness via Lincoln and York to... let me check... Scarborough behind steam (TBA) and return behind Diesel via the Wolds Coast and Bridlington "if time allows" though, since no times have been published, one might ask how they will know.

Thursday 22 May. SD's *Cathedral's Express* will run from Kings Cross to York and return behind 60009. York a.13:00, d.16:45

Friday 6 June. CT's *Highland Clansman* will run from Darlington to Aviemore topped and tailed by Class 47s. Times listed are stops.

Darlington 07:30, Durham 07:50, Chester le Street 08:00, Newcastle Central 08:15  
Newcastle Central 21:15, Chester le Street 21:30, Durham 21:40, Darlington 22:05

Saturday 7 June. CT's *Highland Clansman* will run from Saltburn to Aviemore topped and tailed by Class 47s and stopping at Redcar Central, Thornaby, Stockton and Billingham as well as...

Saltburn 06:00, Middlesbrough 06:30, Hartlepool 07:15, Sunderland 07:45, Newcastle Central 08:15  
Newcastle Central 21:15, Sunderland 21:35, Hartlepool 22:05, Middlesbrough 22:50, Saltburn 23:15

Saturday 7 June. The RTC's *Wizard's Express* will run from Manchester Victoria to York and return with GWR Hall class 5972 *Olton Hall* (still in costume as *Hogwarts Castle*) in charge between Carnforth and York. York a.12:30, d.16:30.

Saturday 7 June. Statesman Rail's (SR) *Beamish and Durham Statesman* will run from Swindon to Newcastle stopping in Durham topped and tailed by Class 47s with a 'bus from Durham to Beamish if you were wondering. No times are listed- best guess 12:00-16:00 Durham, 12:30-15:30 Newcastle.

Saturday 14 June. PMRT's *Yorkshire Coronation* will run from Lincoln to Scarborough starting and ending behind Diesel but with 46233 in charge between Derby and Scarborough.

York 12:07, Scarborough a.13:07, d.16:15, York 15:13.

Saturday 14 June. SD's *Cathedral's Express* will run from Southend to York behind 60009 and return by Diesel. York a.14:00, d.17:15

Tuesday 17 June. SD's *Cathedral's Express* will run from Tottenham Hale to York behind a Diesel and return behind 60009. York a.13:15, d.16:45

Saturday 21 June. The RTC's *Cumbrian Mountain Express* with 60009 in charge will start from Newcastle Central picking up on the way to York thence to Leeds, Settle and Carlisle (on the S&C naturally). After a two hour stop it will return to Newcastle on the Tyne Valley line where Diesel (no details) will take over to York. Times listed are stops.

Newcastle 08:30, Durham 09:00, Darlington 09:30, York 10:45 (that's what it says)  
Newcastle 18:35, Durham 19:30, Darlington 20:00, York 20:25.

Saturday 21 June. NENTA Train Tours' (NTT) *York, NYMR and Scarborough* will run from the Mid Norfolk Railway at Dereham to Scarborough stopping at Ripon, Malton and York topped and tailed by Class 47s. No times are listed.

Saturday 28 June. The RTC's *East Riding* will run from King's Cross to Scarborough departing the ECML at Doncaster and taking the coast line but returning via York behind BR 7P 70013 *Oliver Cromwell*. Scarborough a.13:30, d.15:30- no other times listed.

Saturday 28 June. SR's *Beamish and Durham Statesman* will run from Bangor- "details" as above.

### Friends Meetings for 2014

Meetings are at the Museum usually taking place in the Conference Room on the first Thursday of the month. Due to changes in the way the Museum is managed and to reduce the expense the Museum incurs as host *all* meetings for the foreseeable future will take place in the afternoon allowing it to save considerably on lighting, overtime, etc. Meetings commence at 1:45pm with the talk starting after announcements to members.

All the dates listed are Thursdays but note that there are exceptions to the usual first Thursday schedule. The second September talk near the anniversary of the S&DR is on the 25th which, in turn, pushes the October meeting back a week avoiding meetings on consecutive weeks and the December meeting is also on the second Thursday, the 11th, nearer Christmas.

- 1 May **Weardale Railway Update.** John Askwith of the Weardale Railway Trust.
- 5 June **No Title.**  
Anthony Coulls, Senior Curator, Rail Vehicles Collections, NRM.
- 3 July **Media Matters.** David Porter.
- August **No Meeting.**
- 4 September **No Title.** Paul Kirkman, Director, The National Railway Museum.
- 25 September **A Look at the 100th Anniversary in 1925 then Steam in and Around York.**  
Chris Nettleton.
- 9 October Jerry Swift was forced to cancel as this issue was going to the printers.
- 6 November **Railways and Remembrance.** Ian McInnes.
- 11 December **Christmas Get-Together** Prize quiz and film show.

This list is offered in good faith but misprints can occur and plans can change. The Events page of the Friends web-site ([www.friendsofdrmc.org](http://www.friendsofdrmc.org)) will be updated as soon as possible to reflect any changes of programme.

### Museum Programme

See the Museum's website ([www.head-of-steam.co.uk](http://www.head-of-steam.co.uk)) or call 01325 460532. For details of the Museum's educational workshops for schools contact Sarah Gouldsbrough (01325 734128 [sarah.gouldsbrough@darlington.gov.uk](mailto:sarah.gouldsbrough@darlington.gov.uk)) the Museum's Access and Learning Officer or, again, see the Museum own website or programme.

### Exhibitions

**A Ticket to Teesdale: Remembering the "Barney Line".** March to May. Curated by NERA and showing photographs from its collection this marks the 50th anniversary of the closure to passengers of the Stockton and Darlington Railway built lines to Barnard Castle and beyond.

**Freepass.** Tuesday 8 April to Sunday 27 July. Heritage and railways explored using textiles and media by Catherine Howard. Includes workshops- see Activities.

**Trains to Trenches.** Friday 1 August to Sunday 2 November. The First World War's impact on Darlington and the railway industry.

**The First World War in the Tees Valley 1914-1918.** Throughout August. Touring exhibition.

**Fighting Cocks Branch.** September to November. Curated by NERA and showing photographs from its collection of this forgotten section of the original Stockton and Darlington line.

**Making a Mark** (with the National Portrait Gallery). Saturday 8 November to Wednesday 31 December. Part of the Arts Council England's Museums and Schools programme. Ghost and detective stories by students, photographs of current and Victorian writers.

### Events and Other Talks

Where prices are not mentioned entry will be covered by the Museum's usual charges. Year pass holders or Friends of DRCM members are free unless otherwise noted.

**Darlington Jazz Festival** (with the Forum Music Centre and Voodoo Café). Thursday 24 to Sunday 27 April. Bands will play at the Museum on the Sunday. Enquires to the Festival team: [darlingtonjazzfestival@live.com](mailto:darlingtonjazzfestival@live.com).

**Freepass.** Talks and events have been arranged by Catherine Howard to coincide with her exhibition. An additional fee applies to most- please contact the Museum.

- **Textile Journey.** Sunday 27 April, 1pm. Talk.
- **Art Exhibition Selling Event.** Weekend 10 & 11 May.
- **History of Design.** Sunday 8 June, 1pm. Talk by Malcolm Clements.
- **Textile Fair.** Weekend 21 & 22 June, 10am to 3:30pm. Selling event.
- **Railway Interiors.** Sunday 6 July, 1pm. Talk.
- **WW1 Themed Selling Event.** Sunday 13 July, 10am to 3:30pm.

**NERA Lectures: A Further County Durham Miscellany.** Saturday 17 May, 1pm. Colin Ryder of the North Eastern Railway Association. Free.

**Vintage Vehicle Rally.** Sunday 18 May. Rare and unusual vehicles from across the region, mini-train ride, arts and crafts, juggling and balloon making.

**A Grand Day Out.** Sunday 20 July. Fairground stalls and rides.

**Darlington Comedy Festival.** Saturday 26 July. Comedian Andy Fury leads off-beat guided tours of the Museum at 12:00, 3:00, 4:30 and 6:00. Booking essential, tickets are £5. Warning: May not be strictly accurate or (for the tours after 4pm) suitable for children.

**Heritage Open Days.** Saturday 13 and Sunday 14 September. Free entry to the Museum including guided tours by the Friends.

**Little Boo! And Bigger Boo!** Sunday October 26. Little Boo! (11am to 3.30pm) and Bigger Boo! (5pm to 7pm) Halloween events for different ages. For Bigger Boo! tickets are £5 including hot chocolate and booking is essential.

**NERA Lectures: An Archivist's View of Items in the NERA Archive.** Saturday 15 November 1pm. Lecture by Robin Coulthard. Free.

**Santa at the Station.** Weekends 13 & 14 and 20 & 21 December. Santa's grotto, arts and crafts and mini train ride. Booking essential.

### Activities

Where prices are not mentioned entry will be covered by the Museum's usual charges. Year pass holders or Friends of DRCM members are free unless otherwise noted.

**Family Arts and Crafts.** Tuesdays, Thursday and Fridays 7 to 22 April, 1pm to 3pm.

**Freepass.** Workshops have been arranged by Catherine Howard to coincide with her exhibition. Additional fees have yet to be determined- please contact the Museum

- **Drop in Activities.** Thursdays 10 and 17 April. For children and families.
- **Introduction to Screen Printing.** Wednesday 4 June. Fee payable.
- **Freehand Machine Embroidery:** Wednesday 11 June. Fee payable.

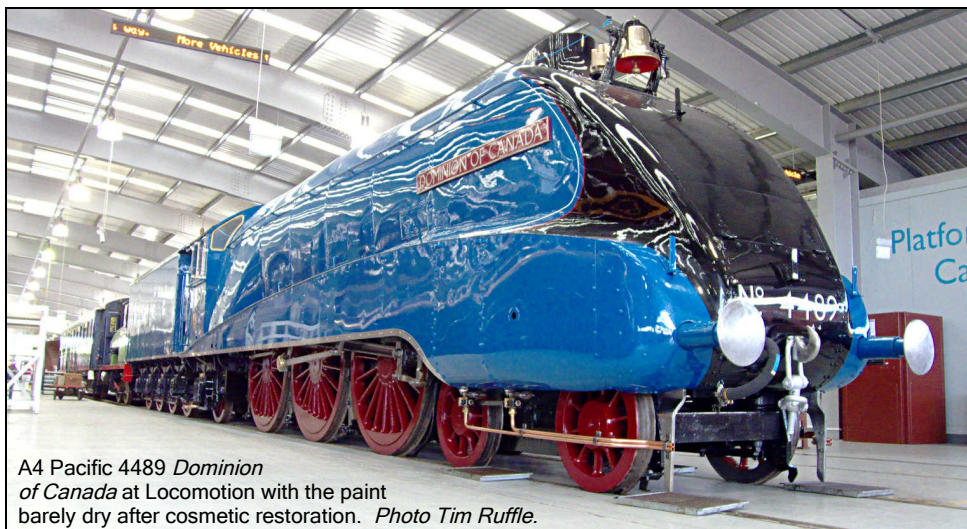
**Easter Activities.** Sunday 20 April, 11am to 3:30pm.

**Family Arts and Crafts.** Tuesday 27, Thursday 29 and Friday 30 in May half term, 1pm to 3pm. (The Museum will be open Bank Holiday Monday 26.)

**Summer Arts and Crafts.** Tuesdays, Thursday and Fridays 23 July to 31 August, 1pm to 3pm.

**Family Arts and Crafts.** Thursday 30 and Friday 31 October, 1pm to 3pm.





A4 Pacific 4489 *Dominion of Canada* at Locomotion with the paint barely dry after cosmetic restoration. Photo Tim Ruffle.



CPH Railmotors 22 (nearest) and 6 plus trailer at Cooma station (page 10). Photo' Phil O'Regan furnished by the Cooma Monaro Railway.



South African Railways Class 3BR number 1486, *Maureen* at Inchanga on the Umgeni Steam Railway (page 6). Photo' Tony Clamp.