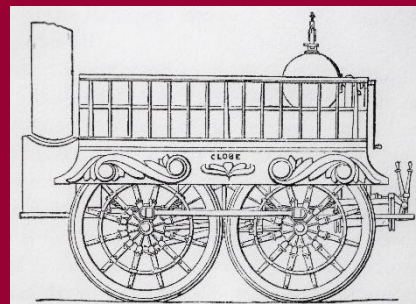


The Globe



The Journal of the Friends of the Stockton & Darlington Railway



1825

2025

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Cover image: 'The replica Locomotion No.1 (1975) approaches Heighington Station on the 26th September with its replica chaldron waggons and passenger coach Experiment (research into the appearance of both by Niall Hammond). Photo: Mike Spencer

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Friends' meetings are held on the first Thursday of every month (except August, the AGM in November is usually a Saturday) at Darlington Cricket Club, DL1 5JD at 7pm. The Christmas meeting is often at the Railway Tavern in Darlington. All Friends are welcome to attend. Papers are circulated to Friends in advance and are available in the members' area of the web site (you should have been given a password when you joined) <https://www.sdr1825.org.uk/>

The Friends of the S&DR. Who we are and what we do.

We are a registered charity and we:

-  act as an umbrella organisation for all those interested in our railway heritage
-  lobby and work with local authorities and government
-  push forward on survey, research and conservation of the line
-  raise the profile and awareness of our heritage, locally, nationally and internationally
-  protect and care for the S&DR remains
-  explore the case for World Heritage Site status
-  support coordinated development of footpaths and interpretation to safely access the line
-  work with others on events for 2025, Bicentenary Year.

WELCOME TO THE GLOBE! THE REGULAR JOURNAL FOR THE FRIENDS OF THE STOCKTON & DARLINGTON RAILWAY



Esteemed Friends,

We did it!

We survived 2025! I had a ball and I hope you did too.

A few statistics of what the Friends got up to in 2025 - the 200th anniversary of the Stockton & Darlington Railway:

- 🚂 The Friends ran a Walking Festival consisting of 42 guided walks. Well done to all the walk leaders.
- 🚂 Many of us walked parts of the line on the 27th September carrying coal and flour (and a couple of apples that snuck a free ride) – thank you to John Raw for organising.
- 🚂 We gave 81 talks about the S&DR to groups, bringing in an excess of £7,300 in speaker's fees (which included one very large donation thanks to the Branch Line Society and A V Dawson).
- 🚂 Fifteen volunteers ran an Information Hub at the Dolphin Centre in Darlington on Fridays and Saturdays (plus a few extra days) from the 18th July to the anniversary weekend in September to help people plan their visit and who preferred not to use web sites.
- 🚂 We produced a day by day events listing from July to December for the S&DR Festival to help people plan their visits to the area.
- 🚂 Over 4,000 children took part in a Little Loco workshop, readings, or were given a free copy of the book courtesy of Durham County Council and Darlington Libraries. She was also adopted by an all-girls football team the Darlington Locomotives and the Little Locos. The story was made into a film by Year 3s from various Darlington primary schools with Darlington Libraries. Her story was also made into an activity trail at Richmond Station. Little Loco and her friends are pretty chuffed.
- 🚂 All of our self-guided walk booklets were updated, redesigned and republished in time for the 200th anniversary. Grab yours here: <https://sdr1825.org.uk/store/>
- 🚂 Our fancy, limited edition coffee table book came out in April and is now nearly sold out. Want to get a copy while you can? <https://sdr1825.org.uk/product/stockton-darlington-railway-book/>
- 🚂 We reintroduced railway character at the Masons Arms at Shildon, Tornado Way, Fighting Cocks, and Stockton's Quayside.
- 🚂 With Maurice Burns, permanent signs have been placed along the 1825 route based on the 1920s sign where the East Coast Mainline and the S&DR once crossed.
- 🚂 We found the funds to bring live music from 1825 to Locomotion and Hopetown from Queen Victoria's Consort.
- 🚂 We supported the Write on Track competition and jointly ran the Research on the Rails competition.
- 🚂 We opened the mysterious package from Waynman Dixon, held by the Dixon family for 100 years, awaiting the 200th anniversary. See the article below by Jonathan Peacock.
- 🚂 We were interviewed on TV, radio, on podcasts, on film, on YouTube, for magazines and journals, on media platforms in this country and in Germany, Denmark, Italy, Japan and two of us went to China to represent the S&DR.

- 🚂 We can't quantify how many of you explored the line via real ale pubs (can you even remember?), but we hope you enjoyed our joint venture with CAMRA combining the joy of rail travel with proper beer.
- 🚂 We organised outdoor street theatre in Stockton and Darlington featuring beer, bread, cheese and a lot of laughs.
- 🚂 We were awarded the King's Award for Voluntary Service on the occasion of his Majesty's 77th birthday in November. Well done all of you! A ceremony will follow in 2026.
- 🚂 We have commissioned a Conservation Management Plan, a Business Development Plan, a Governance Review and a Fund Raising Strategy, all designed to help lead us forward beyond 2025.
- 🚂 We started planning for the next mini S&DR Festival in September 2026. So, what would you like to see happen in future S&DR Festivals? We won't be waiting another 50 years for the next one.
- 🚂 We now legally own Heighington Station. Of course that means it is now OUR responsibility to raise the funds to carry out essential conservation work and bring it back into economic use. If anyone has a spare £1m please, chuck it our way. Insurance costs alone are about £4k a year. We will be relaunching our fund raising campaign very soon. So far, we have applied for grant aid, removed the asbestos, commissioned repointing of the chimney and emergency repairs to the roof and volunteers have started to clear away modern interventions and dumped objects to help reveal what survives below. To keep up to date, just go to the Friends' web page at www.sdr1825.org.uk and click on our Save Heighington Station page.
- 🚂 And of course, as usual, two Globes have been published this year. In this Globe I hope you will enjoy the delightful mix of social history, family history, railway company finances, the science of modelling and for the first time, an account of the varied wildlife habitats provided by disused railways – in this instance on Brusselton Incline. This important work will inform how we manage the Incline in future. Thank you so much to everyone who contributed to this packed and varied edition, worthy of the 200th anniversary of the Stockton & Darlington Railway.

Caroline Hardie, Editor, Friends of the S&DR

From our Chair of the Friends of the S&DR



The memorable events of September 2025 and the bicentenary are now beginning to disappear in the rear-view mirror. Hopefully this has left you with many good memories and feeling inspired to build on the legacy of S&DR200 and the worldwide acknowledgement we've received that this is the date everyone looks to as the birth of the modern railway. What we of course acknowledge, is that the S&DR with its pioneering ideas and experimentation didn't appear out of nowhere. There are several hundred years of railway history before 1825 and we recognise our deep

roots (routes?) at Hetton, Tanfield, the Tyneside waggonways and elsewhere.

Now is the time to take forward our vision for the future where the S&DR plays a key role in regional tourism, volunteering and education every year, not just once every fifty. Working with

partners we hope to establish an annual S&DR festival every September. We're open to ideas of what events this might contain and offers of help, so do get in touch if you feel inspired. An annual festival is part of our wider future business planning and as members will be aware our sights are very firmly on making sure the S&DR is looked after and celebrated after 2025, becoming a permanent source of community pride and a visitor attraction of international importance. As such we have a National Lottery Heritage Fund grant to deliver a Business Plan, Conservation Management Plan, Governance Review, Fund Raising Strategy and attract and train new trustees and volunteers. We aim to deliver these by the middle of 2026 and we hope these plans will also be adopted by Durham, Darlington and Stockton councils and other partners.

Support of members and in particular guidance of our trustees are key to our success. At this year's AGM we thanked retiring trustee Ross Chisholm for his many years of service as he stood down (but I'm so pleased he will continue undertaking planning advice for us!). We welcome several new trustees Kerrin Wilson, Paul Bruce, Sue McTague and Margaret Fenwick who each in different ways bring significant skills to our trustee body and I look forward to working with them.

The spirit of 2025 has raised aspirations for getting further recognition for the S&DR, and I have been working with local constituency MPs along the line to explore with the Department of Culture, Media and Sport, a potential bid to have the S&DR inscribed as a World Heritage Site. This is a complex and lengthy process, but we are confident that the S&DR does show Outstanding Universal Value and will be an excellent candidate. Frustratingly, the list for future UK nominations is only reviewed once every 10 years and we missed an opportunity in 2022. Nevertheless with the support of Alan Stickland, Sam Rushworth, Lola McAvoy and Chris MacDonald MPs, I have met with Baroness Twycross the Culture Minister for a first exploratory discussion.



The King's Award for Voluntary Service

All members should be proud and hopefully will have heard in November that we were awarded the King's Award for Voluntary Service (a sort of MBE for groups to mark excellent community service). We are hoping to have a formal presentation of the award early next year when all FSDR members will be invited to the presentation at a venue in the region. This event, the restoration of Heighington Station and, our other plans for 2026 make it an exciting future for the Friends of the S&DR and our work to ensure the future conservation and celebration of 'the railway that got the world on track'. If you have ideas, or want to help with how we do this, please get in touch. We really value your membership but any additional help in anyway is always appreciated.

Niall Hammond

On Prince Edward's great day on the Stockton & Darlington Railway, he rode in the recreated Experiment carriage behind the replica Locomotion No 1 at the National Railway Museum at Shildon.



HRH Prince Edward, Duke of Edinburgh, amongst the VIPs in Experiment at Locomotion, Shildon on the 26th September 2025. The research into how Experiment originally appeared was carried out by Niall Hammond of the Friends of the S&DR.

The original Experiment was the VIP railway passenger carriage made specially for the S&DR by Robert Stephenson & Co in Newcastle. Emblazoned along the replica's roofline, just above Edward's head, is the railway company's Latin motto: *periculum privatum, utilitas publica* – private risk for public benefit. It is a perfect motto for a Quaker enterprise. Rather than just setting up the business to make themselves filthy rich, the railway pioneers felt they were investing their own money in something that would be of value to the wider population.

But where did the motto come from?

Jane Hatcher, the renowned Richmond historian, has a letter that the headteacher of Richmond Grammar School, James Tate, sent to the S&DR's chairman, Thomas Meynell, of Yarm, and solicitor, Francis Mewburn, of Darlington, on May 14, 1821, in answer to their request for some motto advice. Mr Tate, a man said to be 'dripping with Greek' who had turned Richmond into one of the leading classical schools in the whole country, gave them six options:

1. *Nisi utile est quod facimus, vana est gloria*, which translates as 'unless what we do is useful, glory is vain'. But Mr Tate realised that this quote from the Greek philosopher Plato is not

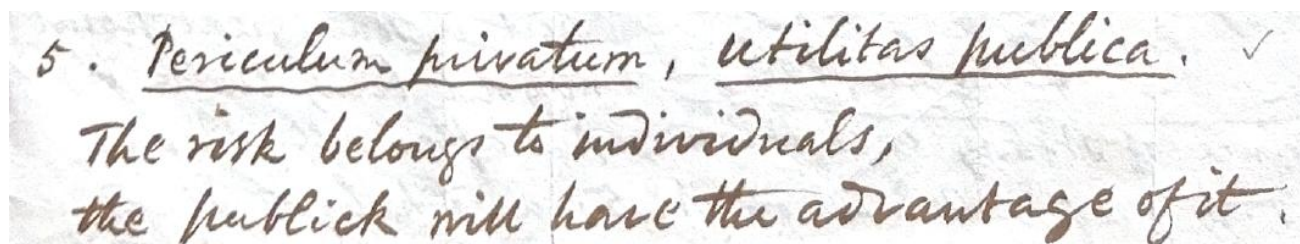
appropriate for the humble Quakers. He wrote beneath it: 'Ostentation and idle talk of their doings belongs not to the Friends'.

2. *Pro bono publico*, which means 'for the public good'. Mr Tate said: 'It is the best of all possible meanings, but the phrase has become trite and common, as I trust the tramway itself will be ere long.'

3. *Prodesse omnibys, nocere remiui*, which means something like 'I have always tried to do good and harm no one'. Mr Tate said: 'A very plain but substantial motto, suitable to the work itself.'

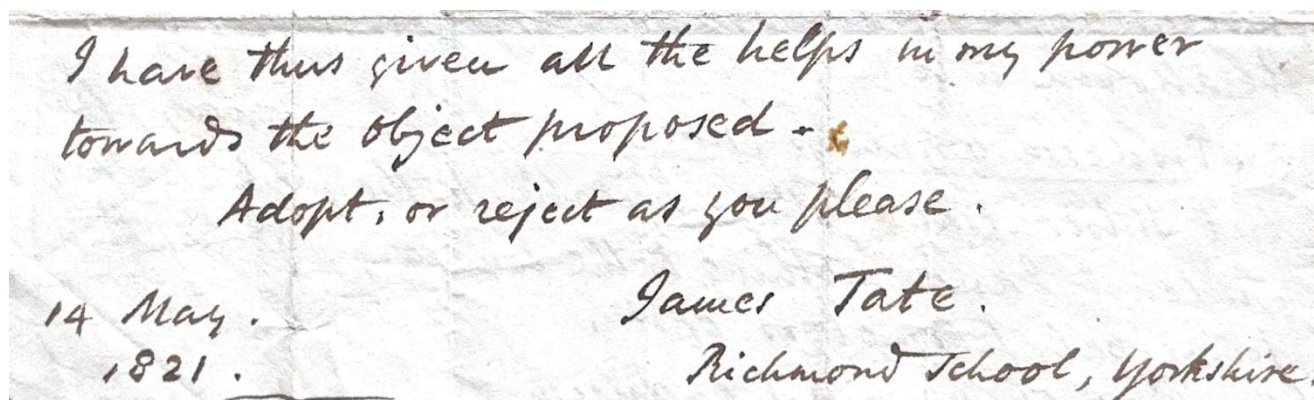
4. *Industria nihil arduum*, or 'nothing is difficult with hard work'.

5. *Periculum privatum, utilitas publica*, which is the chosen motto which Mr Tate seems to have composed. He translated it as: 'The risk belongs to individuals, the publick will have the advantage of it'.



5. Periculum privatum, utilitas publica. ✓
The risk belongs to individuals,
the publick will have the advantage of it.

6. *Ex carbonibus thesaurus*, or 'treasure from coal'. This ancient phrase also has a meaning about how free trade fires an economy and makes everyone richer. Mr Tate wrote: 'Might not be unapt as a classical allusion conveying a commercial truth.' But then he put a cross through it.



I have thus given all the helps in my power
towards the object proposed - ✕
Adopt, or reject as you please.
14 May .
1821 .
James Tate .
Richmond School, Yorkshire.

He finished his letter by saying: 'I have thus given all the help in my power towards the object proposed. Adopt, or reject as you please.'

But he returned to the letter the following day, and added: 'Tuesday noon, I have thought all this over again, with much anxiety to avoid whatever may possibly be at all awkward and to hit on what may suit in some great point without being liable to any chance of strong exception. And after all, I am inclined to prefer No 4 or No 5 as likely to stand the best against all criticism or censure.'

Tuesday noon. I have thought all this over again, with much anxiety to avoid whatever may possibly be at all awkward
To Francis Newburn Esq^r Darlington & to hit on what may suit in some great point without being liable to any chance of strong exception. And after all, I am inclined to prefer N^o. 4. or N^o. 5. as likely to stand the best against all criticism or censure. J. Tate.

The railway company moved quickly. Just ten days after Mr Tate added his PS, on May 25, 1821, the committee adopted No 5 as its motto, which the Reverend Daniel Milford Peacock drew into the company's badge, which showed a horse pulling a train of coal waggons – the company had not yet officially adopted steam power.



The company seal was designed by Rev. Daniel Mitford before the decision was made to switch to steam power.

Mr Peacock, the vicar of Great Stainton, near Sedgefield, who came from Danby Wiske, near Northallerton, is usually credited with choosing the motto, but now we know that it was a classical headmaster from Richmond who put the S&DR on the right track with his knowledge of Latin.

With many thanks to Jane Hatcher and Doug Waugh for passing on a scan of the letter.

S&DR 200 RESEARCH ON THE RAILS PRIZE COMPETITION WINNER ANNOUNCED

To celebrate the 200th anniversary of the opening of the Stockton and Darlington Railway in 1825, Cleveland & Teesside Local History Society and the Friends of the Stockton & Darlington Railway collaborated to fund a prize essay competition.

After careful consideration of the essays submitted, a winner has been announced: Gillian Bryant for her essay 'Be It Remembered – William Lister, Iron Founder and Engine Builder (1785-1850)'.

The aim of the competition was to add to our historical knowledge and understanding of the S&DR, through original research on any subject connected to the history of the Stockton & Darlington Railway up to 1863, including its impact beyond that date.

Gillian's research certainly fulfilled these expectations, revealing the story of a man who was instrumental in building several locomotives for the Stockton & Darlington Railway, and exploring the competition that existed between rival iron foundries and engine builders.



Gillian (centre) receiving her cheque for £1,000 from Caroline Hardie (Friends of the S&DR) and Martin Peagam (representing Cleveland & Teesside Local History Society)

Commenting on the winning essay, Caroline Hardie, of the Friends of the Stockton & Darlington Railway said 'Gillian's research shines a light on to one of the less well-known individuals associated with the S&DR. The range of primary sources she used was incredibly wide including local, regional and national archives, supported by secondary sources to provide background context.'

On behalf of Cleveland & Teesside Local History Society, John Little said, 'The competition attracted several entries, and we are grateful to everyone who

took the time to research, write and submit entries'.

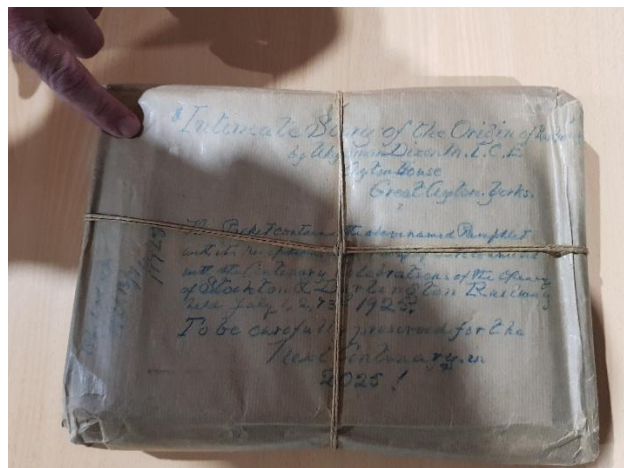
John added, 'It was a difficult, but enjoyable, task for the judges to read the breadth of research undertaken, but we were unanimous as to the winning essay'.

The prize of £1,000 was provided jointly by Cleveland & Teesside Local History Society and The Friends of the Stockton & Darlington Railway.

THE DIXON ARCHIVE

Jonathan Peacock

On the 25th September 2025 we had a gathering of Dixons at Locomotion to observe the opening of the 'time package' that Waynman Dixon (1844-1930) had sealed for 100 years at the S&DR centenary in 1925. This was being kept by Jeremy Dixon, who also had a large trunk of Waynman's other papers, and these he now brought north for deposit in local archives. What a vast treasure trove it is...



The package sealed by Waynman Dixon in 1925 with instructions for it not to be opened until 2025. After careful opening by archivists from The Story, Durham, it turned out to contain copies of his pamphlet on the railway, several commemorative copies of newspapers, including the Northern Echo and Punch, and letters containing feedback from colleagues about his pamphlet. However the Dixons

also had a large metal trunk containing many more wonders which they have left for us to explore and then pass on to the Durham Records Office (now The Story)

Much of it is Waynman's hand-written notes, jottings and letters concerning family history, with many of the letters being exchanged with George Blundell Longstaff (1849-1921), a noted entomologist and genealogist. It also contains a whole gallery of extremely talented family artwork, including much by Clive MacDonnell Dixon (1870-1914), his nephew; Raylton Dixon (1838-1901) and John Dixon (1835-1891) his brothers; Robert Dixon (1800-1858), his uncle; John Dixon (1762-1816) his grandfather and, of course, his celebrated ancestor Jeremiah Dixon (1733-1779) who was Waynman's great great uncle. An excellence in art was clearly a constant theme of the Dixon genes over the generations, matching the engineering theme.



Dixon family and friends congregated at Locomotion on the 25th September to see the package opened after 100 years

A biography of John Dixon (1796-1865), one of George Stephenson's leading lieutenants, was included in *The Globe*, issue 23, December 2024, p30. As a result of Waynman's papers, though, we are now in a position to offer a more detailed picture of his younger brother Edward Dixon (1809-1877), another significant contributor to the national railway story.

Edward was born on 13th July 1809, the 15th child (of 17!) of John Dixon of Cockfield. His brother, the better-known John, was the 7th. Edward was educated at Ackworth School, and began his engineering career on the Liverpool & Manchester Railway in 1829, under his brother John, who was then employed by George Stephenson to superintend the construction of the line across Chat Moss. A few years later he was engaged near Birmingham, under Robert Stephenson, who was constructing the London & Birmingham Railway. He next accepted the appointment of Resident Engineer, under Joseph Locke, on the London and

Southampton railway, and during its construction resided, first at Wandsworth, and later, at St. Cross, near Winchester.

After the completion of the railway, he became a partner of the Messrs. Twynam, seed crushers at Kortham, Southampton. He had not been there long before he was lured back to the railways, however, working again under Robert Stephenson, on surveys for projected lines of railways in Buckinghamshire, Warwickshire and neighbouring counties – clearly the family surveying genes were as strong as the artistic and engineering ones. Next, he was superintending the construction of the Rugby and Leamington railway, the Bletchley and Oxford, the Leamington and Coventry, and the Nuneaton and Coventry railways. Before the completion of the last-mentioned of these, he acted as Resident Engineer of the London and Birmingham railway, during the illness of Robert Benson Dockray, at which time he resided in London. When no hope was entertained of Mr. Dockray's recovery, the appointment was offered to Mr Dixon, but was declined by him (with thanks for some of this story to the Institute of Civil Engineers).

His peripatetic work life is indicated by where his children were born: the first in Birmingham, the second in Wandsworth, the third in Winchester, the next two in Leamington Spa and the last three in Southampton. Edward Dixon has also been described as the first train spotter, as he wrote one of the first books on different locomotives. His passion for mechanical transport continued into later life, as he was one of the founders and original directors of the Union Steam Ship Company, for many years the only mail service to the Cape of Good Hope and South Africa.



Left: The metal trunk containing the Dixon archive and right, Jonathan Peacock extols the virtues of the Dixon archive while the archivist Carolyn Ball and conservator Lindsey Gibson carefully repackage items to ensure their safe keeping

Another treasure in Waynman's trunk was a letter to the editor, published in the Observer of 23rd January 1825, under the heading 'Railways'.

Mr Editor – In answer to the queries of Publicola, inserted in your paper of the 9th inst., I beg to say that many of the gentlemen who originated the plan of Railway from Birmingham to Liverpool are ironmasters; and that twelve of the committee or directors of the projected Railway from Birmingham to London are also ironmasters

and that the chairman of the projected Grand Junction Railway is also an ironmaster. That the price of manufactured iron at the works at Lady Day was £7 10s. per ton, at Michaelmas £11 0s., at Christmas £13 0s., the increase in nine months being £5 10s. per ton, for the ironmasters' advantage exclusively. And they boast that if Parliament will sanction these Railways, the price of iron must be £20 per ton before next Midsummer, being almost double the price of iron in Sweden, etc.

Now, Sir, this may suit the temporary purposes of one class (and that a small one), but I boldly appeal to the public whether they will embark in schemes injurious to many of the most deserving and numerous classes of retail dealers; and it is remarkable that, in effect, these schemes have already imposed on this staple article a tax nearly three times more in amount than that which in the year 1806 was unsuccessfully proposed by the present Honorary President of the projected London Northern Railway (then Chancellor of the Exchequer) – Yours etc.,

Jan 19 1825

VERAX

With much still to be perused, we hope to find more interesting stories, although it must be confessed that Waynman was somewhat fanciful in some of the accounts he created, and was certainly too ready to invent elevated connections for the Dixon ancestry. Much that he has left us, though, is of real and lasting value and will be a very significant addition to the County Durham Archives.

2025 - A YEAR OF NATURE ON THE BRUSSELTON INCLINE

Jill Cunningham, Carole Sobkowiak and Falgunnee Sarker

The Darlington and Teesdale Naturalists' Field Club (DTNFC) were invited by Caitlin Barret, Darlington Borough Council, to survey a stretch of the Stockton & Darlington Railway as our findings could be useful to a future conservation management plan. This plan will cover the whole 43 miles of the track looking at the significance of the line, its heritage, ecology and amenity value. The section chosen for the DTNFC was the path from the Shildon A-6072 tunnel heading west to just beyond Brusselton Lane, including the Incline. It was decided to record throughout the year, noting seasonal changes.



Left: Stigmara Fossil



Right: Clay pipe bowl

An initial visit in January painted a bleak picture, but there were signs of what was to come – Knapweed *Centaurea nigra*, Hogweed *Heracleum sphondylium*, and Teasel *Dipsacus fullonum* seed heads standing tall. Rabbits and rain erosion had brought a fossil to the surface, a stigmaria root, from a fern-like tree in the Carboniferous period.

Later we learned from the S&DR volunteers that the likely source was from stone from local quarries that was originally used to build up the embankments. A disturbed path edge to the east side provided an intriguing clay pipe bowl full of coal dust, a remnant of the bygone age. Lichens such as the miniature *Cladonia* cups and the coarse grey pads of *Parmelia saxatilis* clung to wall tops and crevices. There were good views of Brusselton Wood, an ancient oak woodland, and roe deer were spotted in neighbouring fields as well as buzzards overhead.



Left: Hawthorn blossom

Middle: Apple blossom Right: Adonis Ladybird

By April the annual plants were emerging. Yellow Cowslips *Primula veris* covering the west bank of Brusselton Lane, somehow surviving the strimming. The common Dandelion *Taraxacum* is an aggregate of numerous species of which eight were identified along the Incline. In May the minute white flowered tufts of Common Whitlow-grass *Erophila verna* appeared on the line-top cinder, and the little yellow-blue flowers on curled stems of Changing Forget-me-not *Myosotis discolor* soon after. The fertile banks of tall herbage were awash with Red Campion *Silene dioica* amidst the white clouds of Greater Stitchwort *Stellaria holostea*, Cow Parsley *Anthriscus sylvestris* and Ox-eye Daisy *Leucanthemum vulgare*, and the hedgerows full of Blackthorn *Prunus spinosa* blossom followed by Hawthorn *Crataegus monogyna*. Skylarks were in full song in adjacent fields, finches chattering in the hedgerows, along with martins and swallows around the cottages in June.



Left: Small toadflax

Middle: Occupied sleeper holes

Right: Viper's Bugloss

Frothy heads of Hogweed are a magnet for insects. Fourteen 7-spot Ladybirds; four 14-spot Ladybirds; two Adonis Ladybirds along with numerous bug species, leaf beetles, hoverflies and ichneumon wasps were counted on just one plant on a visit in July. The purple Knapweed, Vetches and spikes of Rosebay *Chamerion angustifolium* spread by the railways were alive with bees.

On the rail site top unexpected patches of Small Toadflax *Chaenorhinum minus* brought delight in June and July. This is an annual plant that is typically fond of old railway ballast. The S&DR volunteers told us the cinder had been brought from the old Weardale line during the 2015 refurbishment. It was fascinating to watch how even the sleeper holes were colonised into miniature rockeries, surrounded by Pearlworts *Sagina apetala* and *procumbens* and later Black Medick *Medicago lupulina*, Clovers *Trifolium repens* and *pratense*, Red Dead-nettle *Lamium purpureum*, and Vetches. Skittering in the cinder were tiny *Nysius* bugs, specialists of this dry, bare terrain.



Hoary Plantain

Seeded embankments at the Brusselton Lane edge were full of Oxeye Daisy *Leucanthemum vulgare*, Lady's Bedstraw *Galium verum*, Birdsfoot-trefoil *Lotus corniculatus* and Wild Carrot *Daucus carota*. By August the pink Musk Mallows *Malva moschata* had appeared as well as tufts of Hoary Plantain *Plantago media*, deep blue sturdy heads of Viper's Bugloss *Echium vulgare* and white cushions of Hedge Bedstraw *Galium album*.

The reservoir behind the cottages is a tranquil hidden gem and often missed. It was initially two ponds built to feed the stationary steam engine, later enlarged. It was developed into a nature reserve in 1988 and is now also stocked for fishing. Nodding green veined heads of Stinking Hellebore *Helleborus foetidus* and patches of Common Bistort *Bistorta officianalis*, likely escapees from the adjacent cottage gardens, thrive on the banking in May and the remains of a Dryad's Saddle *Polyporus squamosus* fungus cling to a stump. By July the striking pink flower spikes of Amphibious Bistort *Persicaria amphibia* and the delicate swirls of Alternate-leaved Water Milfoil *Myriophyllum alterniflorum* push up above the water while swallows dip for a drink.

The path east of the cottages is mostly open hedgerow, trees, shrubs and tall herbage. Raspberries, Sloe, Blackberry, Elder and Domestic Apple species (planted or from thrown cores?), provide a feast towards autumn. Huge Weld *Reseda luteola* plants take advantage of disturbed ground and spears of Good King Henry *Blitum bonus-henricus* stands proud on top of the remains of the Milk Bridge. Near the A-6072 tunnel a small flower meadow area with trees gives a sheltered sunny haven for insect and bird life.

By mid-September the hedgerows were adorned with Rosehips, Hawthorn and Elder berries. Bindweeds *Convolvulus arvensis*, *Calystegia sepium* and *sylvatica*, Yarrow *Achillea millefolium*, Dandelions *Taraxacum* species, Oxeye and Sow-thistles *Sonchus oleraceus* and *arvensis* continue to flower on the banks, and east towards the A-road, a path-side Field Madder *Sherardia arvensis* and Field Speedwell *Veronica persica*

sported their sky-blue flowers, along with golden yellow Hawkweeds *Hieracium* species having their second burst in the original rail-side walling. Redshank *Persicaria maculosa* was noted on the edge of the reservoir, along with its glossy red leaf gall caused by the *Wachtliella persicariae* midge.

In all we recorded over 400 species along the designated area: 210+ plants and mosses; 30+ fungi (many of these as micro-fungi on leaves); 20+ lichens; 100+ insects (including leaf miners and galls) and 30 bird species. A first record for Durham of a Broom leaf-miner, *Agromyza johannae*, was a surprise and the Small Toadflax an absolute delight as this is a declining species that supports biodiversity in the ecosystem.



Left: Amphibious Bistort Middle: Water Milfoil

Right: Green-veined white butterfly



Left: Hawkweed species

Many of the plant species found could be classed as 'common weeds', but it is not the individual species that are important on this site – it is the number of varied habitats, from the open dry bare cinder top, short turf margins, banks of tall herbage as well as the reservoir, hedgerows and old walling that contribute to the ecological landscape. They provide different ecosystems for a wide range of wildlife and ensure that plants are in flower or seed throughout the year providing food for insects, and in turn for birds and small mammals. Without the S&DR line this would be agricultural fields. It provides a much needed, tended, 'linear nature reserve' and habitat link between areas.

For six months of the recording the line was not cleared, enabling the DTNFC to have an intriguing insight into the seasonal appearances of plants, annuals whose seed had survived previous clearings and treatments although, even by late August, it was obvious just how quickly perennials invade the ground! The thorny issue of the use of weedkiller did arise. It is recognised that there needs to be a practical balance between nature, heritage and manpower time. The timing and type of maintenance is a thought for future consideration. By mid-September the line top cinder was half cleared in preparation for the 200th S&DR Anniversary, and we say a farewell to the cinder annuals. They have flowered and seeded and should revel in the bare ground, without the competition of the large perennials, in the spring.

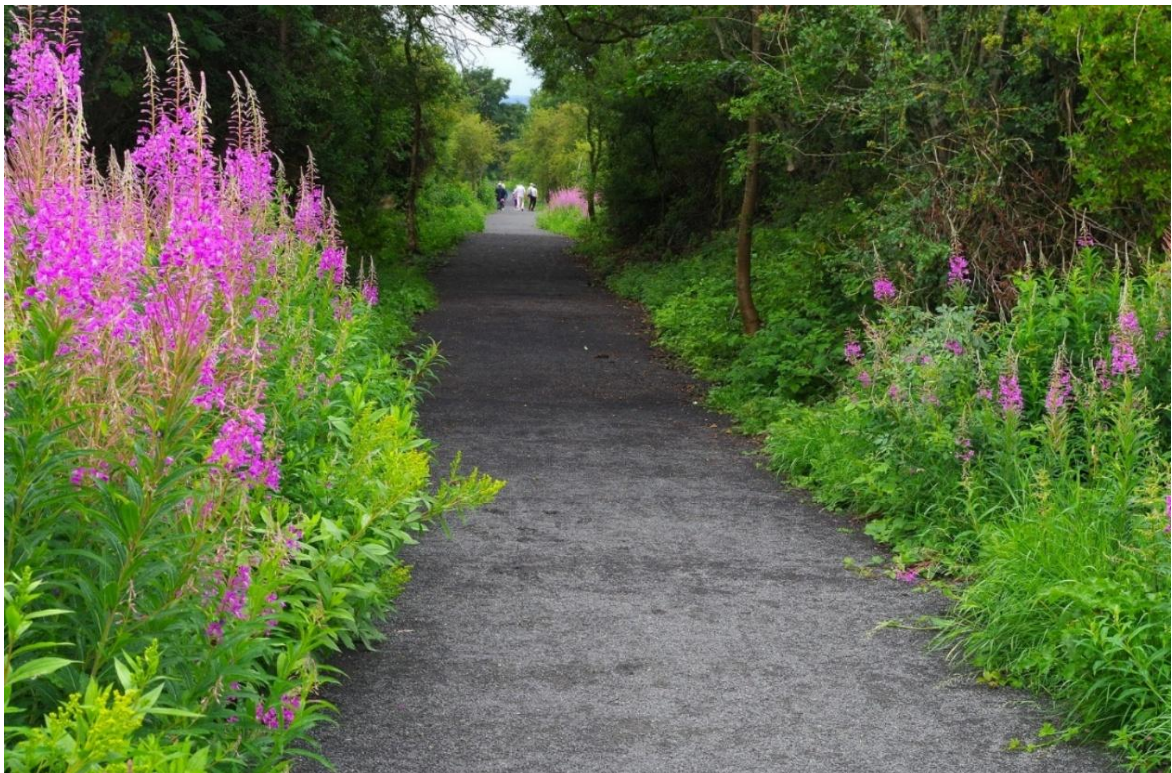


The Incline had disappeared under earth, vegetation and shrubs until the renovation fifteen years ago and this would soon build up again. It is only through the sustained work of the Friends of the S&DR and volunteers that these varied habitats survive.

Cat's-ear on Brusselton Incline

THE NEW ETHERLEY INCLINE WALK

A photo to enjoy taken by Catherine Yates in July, on the day that Mary Smith hosted an S&DR celebratory garden party close to the Incline.



Technical evolution inevitably progresses in a series of fits and starts and this in turn means that a mechanism may be outdated long before it is physically worn out. In the field of railway locomotives this evolutionary pace was often amply absorbed by process by which engines which went so quickly from being 'cutting edge' to faintly comical railway builders' plant – Alfred Rosling Bennett's wonderful book of 1927, 'The Chronicles of Boulton's Siding' amply illustrates this process in the mid to late 19th century. Look how fast 'Rocket' went from being a winner, to a 'ballast engine' and then disappearing into Cumbrian obscurity. In the earliest days of steam locomotion, the very inherent value of the machined and formed components usually ensured that they had a future of some sort, even in a stationary form driving pumps, winders, hammers, lathes, mixers, or anything else where the relatively new compact high pressure steam machine had an application, even if the whole machine was no longer viable. These secondary functions have left tantalising clues for historians seeking to know more about these pioneering machines.

Even the briefest review of some early survivals in re-use would include the following;

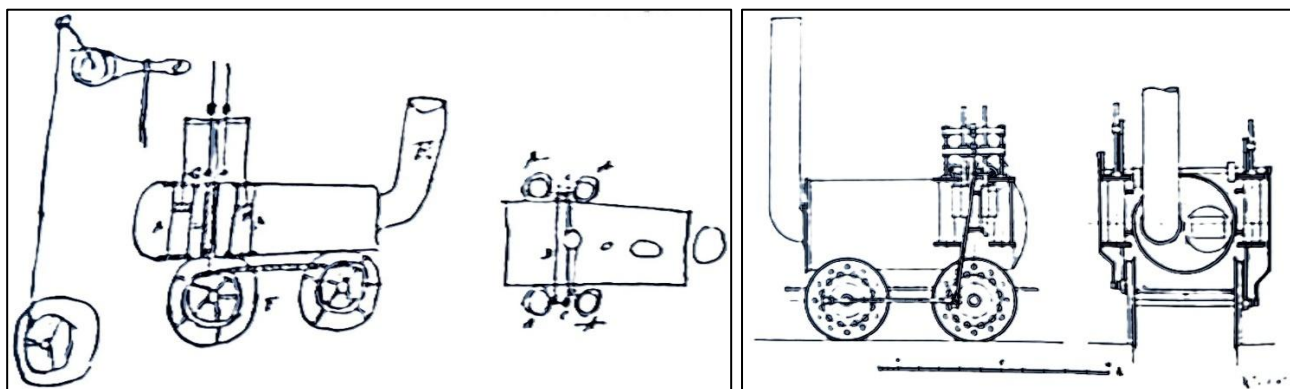
-  The Penyarden engine having a long life after 1804 driving a hammer and then a winch. The unsold Steel / Trevithick Gateshead Engine of 1805 which became the foundry blowing engine at Whinfield's, lasting into the 1860s.¹
-  The contentious possibility that the Hazledine built Trevithick type engine in the Science Museum really is 'Catch Me Who Can', hiding in plain sight. The discovery of the Nattes drawing by John Liffen in 2008 showed that as expected the two are nearly identical, as you would expect.²
-  The cylinder from the Wylam engine of 1812 / 13 by Waters being incorporated into 'Black Billy', the first of the Hackworth / Hedley 'Billy' series.³
-  A cylinder from an original Blenkinsop locomotive surviving into the 1920's powering a colliery chaff cutter at Orrell (for pit pony food).⁴
-  'Stephenson's First' becoming a stationery haulage engine at Willington Quay.⁵
-  The Chapman Whitehaven engine of 1816 converted to pumping and winding in Distington quarry until 1877.⁶
-  One of the Bowes / Springwell engines, named or nicknamed 'The Bull' surviving in a shed at Tanfield where, working with one cylinder, it powered the workshop machinery. The building became known as 'The Bull's Hoose'.⁷
-  Hackworth's 'Sans Pareil'. After use on the Liverpool and Manchester Railway, and then on the Bolton and Leigh Railway, it was sold to Coppull Colliery near Chorley in 1844 for stationary use; there its front axle was removed and a gear wheel added to the rear so that it could power the pumping and winding of the colliery until 1863.
-  Although the boiler of Braithwaite and Ericsson's 'Novelty' of 1829 may have been an acquired taste with its operation and draughting still imperfectly understood, the locomotive survived after Rainhill, working for the St Helen's & Runcorn Gap Railway where it was rebuilt around 1833. The boiler and cylinders were replaced. As the lightest of the Rainhill contenders at around 3 1/2 tons those cylinders were not particularly large at 6" x 12" and at that rebuild they were sold and set to industrial usefulness – one working a lathe and the other a winch. The former survived to be presented to the Science Museum in 1904.⁸
-  'Locomotion' itself ending up at Pease's West Colliery Company by 1850 in stationary use to power a water pump.⁹

So, obviously at the earliest period those worked components had far more value than just as scrap metal; boilers could be patched and reworked, the complex casting and machining of a steam cylinder was not to be discarded lightly.

A primary example of this process is of course at the S&DR where Hackworth had been brought in by the S&DR on the recommendation of Stephenson to try and keep things running, whilst obviously trying to build up the necessary workshop facilities from scratch and to keep the embarrassingly unreliable engines from Forth Street running...

In late 1825¹⁰ Robert Wilson of Newcastle (of no known connection to the Leeds Wilson engine builder) built a four wheeled locomotive with four vertical cylinders, two on each side of the locomotive driving onto crankpins on the wheels of the rear axle and offered it for sale to the railway. It was taken on by the railway for a trial, initially a period of one month but clearly extended, but not yet purchased (the price being £380, some three quarters of the cost of a Stephenson engine). It was at the end of this year that the French engineer, Seguin, visited the railway and noted its design. The enginemmen gave the locomotive the nickname 'Chittapratt', undoubtedly due to the noise created by the exhaust beat of those four cylinders. It was not conspicuously successful or popular and during this time it apparently suffered a flue tube failure during 1826.

I have often wondered about those four cylinders; there seems no obvious advantage at all produced by their known connection and layout and it's tempting to suggest that Wilson was already manufacturing examples of a fairly standard stationary engine of the period for all sorts of purposes, and simply used multiples of his standard castings and valve arrangements as well as his machining capacity, and applied them to his locomotive. Certainly if he had only used two of his 'standard' cylinders, any resulting locomotive would have been really rather underpowered.



Marc Seguin's sketch of Chittapratt (left) and Pearce's conjectural drawing (right), both from Pearce 1996, 35-6

So what was 'Chittapratt' actually like? In his excellent book 'The Locomotives of the Stockton and Darlington Railway' (Historical Model Railway Society 1996) TR Pearce very usefully summarises the available evidence; the Seguin notebooks and sketch rediscovered in 1923 and brought to London in 1927, the conjectural drawing of 1940 by the pioneering and respected early locomotive historian EA Forward, as well as a less detailed conjectural drawing by Pearce himself. Forward's illustration is really very convincing, except that he had not then known that what became known later as 'The Hackworth' wheel of heavy two part make up, was later realised to in fact be 'The Wilson Wheel'; the wheels and design came with the engine and was henceforth adopted enthusiastically by Hackworth as the answer to the ongoing wheel breakage and machining diameter problems on the railway. This is actually crucial in helping our understanding of 'Chittapratt'. Seguin's scribbled sketches and notes tell us that those four

cylinders were of 6" bore (by an indistinct figure of perhaps 20") and steam was controlled by rotary or piston valves of some sort adjacent to the cylinders. These may have been simply a version of the Trevithick plug cock or, less likely, an incredibly early actual piston valve. Given his location Wilson may very well have been entirely familiar with the Gateshead / Steel locomotive of 1805 (he is believed to be on record as having witnessed it testing in the Pipewellgate yard) as well as the development work at Wylam, including of course the return flue boilers used at both of those locations.

Whatever, Hackworth clearly saw some possibilities in the locomotive, or at least some of its components - at least it's return flue offered the prospect of enough steam for the length of the line, so he made or had made a model illustrating his proposal, which happily still survives and is currently on display at Shildon, and in 1827 he received permission from the S&DR management committee to purchase the locomotive in order to form the basis of his celebrated 'Royal George'. As he put it to the committee "Gentlemen, if you will allow me to make an engine in my own way, I will engage that it shall answer your purpose"¹¹

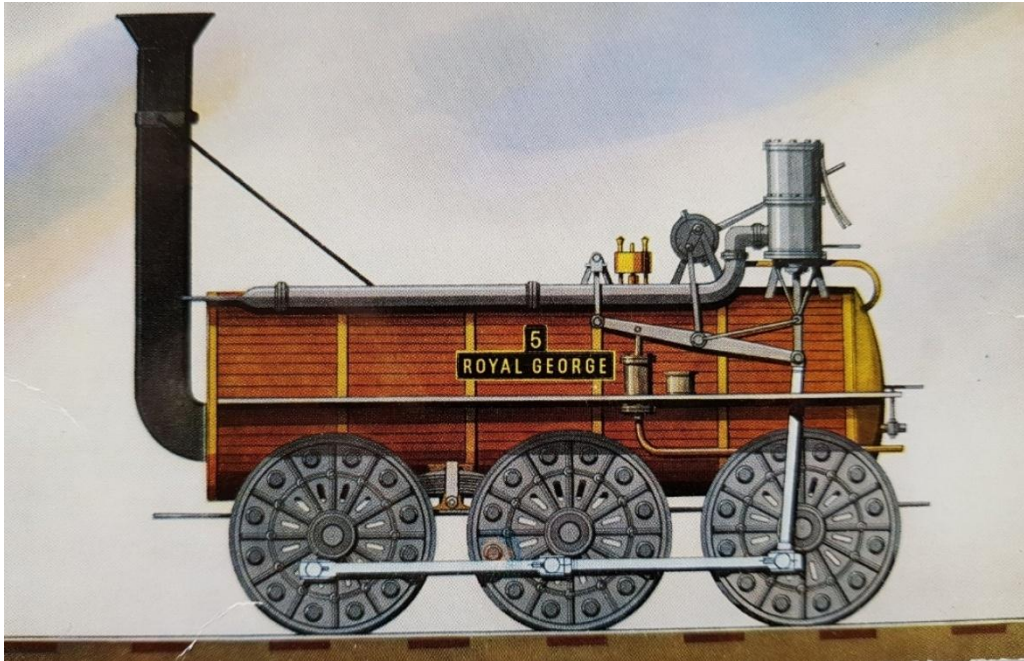
The boiler (and return flue) was lengthened; some writers claimed that it was also increased in diameter, an idea which seems wildly impractical as it would involve de-riveting the whole thing, heating and re-bending the plates – only to find that the rivet holes would not then line up. And don't get me started on the dished end plate...

But back to those wheels, and crucially their crank pin location, re-using these means that the stroke of the 'new' locomotive was already pre-determined. We know that the cylinders of 'Royal George' had a bore of 11" and a stroke of 20". This considerably increases the likelihood of 'Chittapratt's' wheels being reused and therefore confirms that locomotive's stroke. Previous Wylam locomotives had inherited the very long Trevithick stroke and the Stephenson engines tended to be of 24".

Just as at the parsimonious Wylam, where Hackworth had not had a clean slate or easy budget in using parts of 'Black Billy' in building the first of his 'Billy' series, here he was again building a pragmatic coal hauler out of what was available and, particularly, what could be built in the prevailing and still simple conditions at Shildon. The boiler work was outshopped to John Wight of Lumley Forge (see 'John Wight 1764-1835 Iron Founder to the S&DR' by Clare Abbott in *The Globe*, December 2022.)

Pearce says the "the boiler... with possibly the wheels and some of the valve gear" were re-used. That seems entirely pragmatic. However, the locomotive had already been rather overweight and extending the boiler will have made that a lot worse, so Hackworth (presumably borrowing or more likely purchasing Wilson's wheel patterns) mounted the whole on six wheels, an arrangement which was to go on to become an industry standard for the next hundred years or so.

So, by late 1827 Hackworth had a finished locomotive, one which was simple and robust, its design and construction informed by his recent experience struggling with the Stephenson engines, as well as his work at Wylam before that, and it became famous – his 'Royal George'. But what was left? Back to my original point about the value of worked and machined metal; he had four spare cylinders on the workshop shelves, cylinders of 6" bore and 20" stroke. They had an already noted rotary valve of some sort... not much use for railway engines, but just the thing for powering mills, or workshops, the sort of customer that presumably Wilson had been supplying.

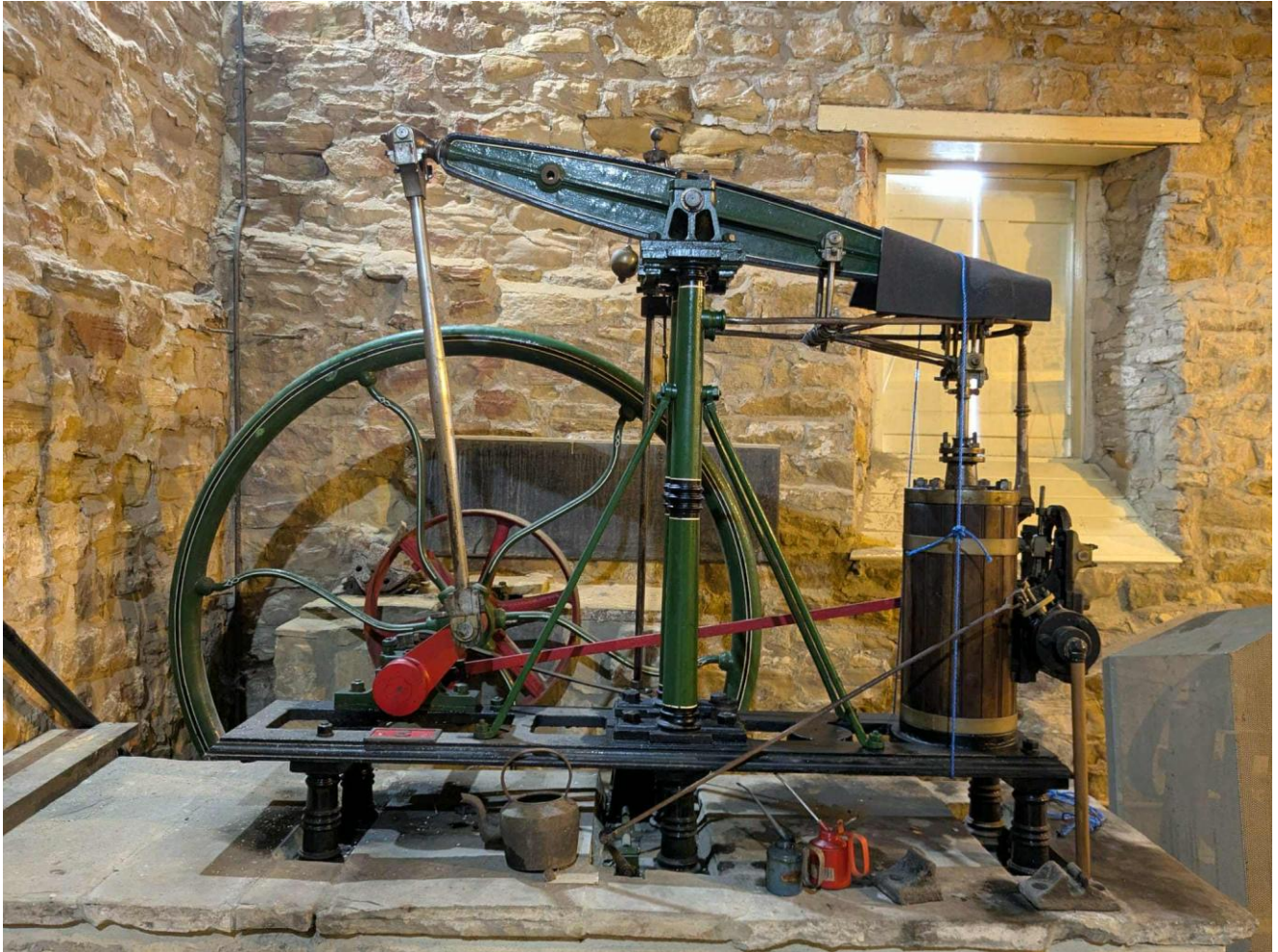


Hackworth's Locomotive "Royal George", Stockton & Darlington Railway 1827. Image copyright The Salmon Picture Library.

At some unrecorded point in the past, the Science Museum, or more likely the NER / York collection which had opened to the public back in 1928 took possession of an unremarkable little beam engine, said by some to be from Stephenson's works although it is surely unlikely that such an outdated thing would have been transferred from Newcastle to Darlington on the company move in 1902 or even that any faint association with the revered George would have been lost. Others said that it was from Hackworth's Works, so far more probably it was indeed from the Soho Works at Shildon where it presumably had been powering workshop tools. The current accession number of the poor old thing is 1986-7123, and it is simply described as a 'beam engine from Shildon works', the collections website does not even have a picture. Well, clearly it had been at York a lot longer than that; this sort of number is not unusual in museum administration, it means that the object had either previously not been properly accessioned into a museum's collection, or that it had lost its identity and was therefore given a new starting point of identification. Certainly in 1831 Hackworth's account book recorded the 'Expenses of Keeping (the) Shop Engine'¹² so there was one which must have powered the simple tools to build 'Sans Pareil' itself and keep the other early S&D locomotives running as best they could. This, the original Hackworth / S&DR works, effectively closed in 1850 but lingered on until its sale to the S&DR in 1855. By 1857 there was a 20hp engine driving the machinery there but railway operations at the site seem to have finally ceased in 1883. The history after this until demolition in the late 1940's is not relevant here. If the '1831' workshop engine survived to that point, what happened to it next? Surely anything useful would have been transferred to the main NER Shildon Works? Perhaps it was, to use or as a relic? It is not recorded, but a further move to York is then at least possible, if it had somehow survived, in the early collection there. When Hackworth's house and Kilburn's Iron Warehouse (then known as 'the Soho Shed') was opened to the public in 1975, the little engine, by then seen as firmly something to do with Hackworth, came north again to be occasionally run on compressed air.

It's still in there, right now. So what is it? Well, it is a well-made small vertical beam engine, it uses Fremantle valve gear, as on 'Locomotion' and the Wylam engines. It has a cylinder of 6" bore by 20" stroke, actuated by a curious rotary cock arrangement. It is dated by the NRM/Science Museum record speculatively to c.1830. Just about the time that the economically minded Hackworth was setting up his workshops, the same time that he had

those four spare cylinders of the very same bore and stroke, with that cylindrical valve arrangement sitting there on the shelf...



The beam engine in Kilburn's Warehouse. Photo: Anthony Coulls

Notes

¹ See Rees & Guy 'Trevithick and pioneer locomotives', Early Railways 3 (Ed. MR Bailey) Six Martlets 2006

² See Liffen, John 'Searching for Trevithick's London railway of 1808', Early Railways 4 (Ed. Grahame Boyes) Six Martlets 2010.

³ Ibid ii

⁴ Noted in D. Anderson 'The Orrell Coalfield, Lancashire 1740 – 1850 (Stoke-on-Trent: Moorland Publishing, 1975) pp. 111-117.

⁵ Beamish, the North of England Open Air Museum, in a scrapbook entitled 'Geo and Robert Stephenson' cited by Andy Guy in 'Early Railways: Some Curiosities and Connundrums', in Early Railways 2 (Ed. MJT Lewis. Newcomen Society 2003.

⁶ Ref. Issac Fletcher, 'The Archaeology of the West Cumberland Coal Trade'. Transactions of the Cumberland and Westmoreland Archaeological Society. Vol. III 1878.

⁷ The Springwell Colliery railway dated from 1826 and was originally supplied with Stephenson two engines of the 'Killingworth' type.

⁸ Science Museum Group Collections website.

⁹ 'Locomotion' Bailey and Davidson 2023. 56.

¹⁰ Robert Young, 'Timothy Hackworth and the Locomotive' (1923) Shildon 1975.

¹¹ Young, 1975 p. 151.

¹² For this detail and much following else to do with the Soho Works I am much indebted to Dieter Hopkin's work in ER4, 'Timothy Hackworth & the Soho Works c. 1830 – 1850. ER4 (Ed. Grahame Boyes) 2010 Six Martlets Publishing.

More than 30 years ago, I bought a tiny stone-built cottage which was half a mile from the nearest main road. It was accessed by a rough dirt track beside the hamlet of Hummerbeck yet stood in stunningly beautiful countryside which more than compensated for the isolation. The property came with a small parcel of land and the intention was to open a business offering holidays to those who wanted to bring their dogs along with them. I would have to apply for planning permission to extend but could not see a problem. There was one neighbour living in the nearby farmhouse, not farming, but running boarding kennels from the outbuildings. My business plan was to be very different.



*The H3 plaque when it was still in situ c.1990.
Photo: John Proud collection courtesy of Win Proud*

When I turned up to view the property, I spotted that there was a metal plate fixed high up on the gable end wall. It had a number stamped on it and I vaguely remember thinking 'a connection to the railways' but I had no idea what that meant. I quickly forgot all about it, until that is, my offer was accepted. I moved in and noticed right away that the numbered plate had been removed.

Over the coming weeks, I became familiar with the construction of the cottage, the depth of the stone walls, even the interior walls must have been 3 feet thick. The doorways were wide but very low, the kitchen and bathroom were inadequate, and the fireplace was huge. I quickly realised that this was no ordinary domestic dwelling, it was too 'industrial'. In the garden I found huge stone blocks with 4 strange holes hewn from the stone on one side. The

access drive was long, straight as a dye and very flat. Little did I realise that years later and after much research, all would be revealed about my little cottage.



The cottage after it was sold and the plaque removed

I quickly became disillusioned with the 'dog holidays' idea. The house was damp, very damp, planning permission was challenging as I wanted to site two luxury caravans on the land. I got

a promotion at work and costs for the house and business were out of control. I moved to Walworth Gate. The house was warm and in good condition and I put my dream behind me.

I began researching my family history. My Great Great Grandparents had been farmers in Teesdale with the first census (1841) showing them living in Marwood near Barnard Castle with eight children, seven sons and one daughter, Sarah. The farm could not support so many of the next generation, so it was taken on by Sarah and her new husband with most of her brothers moving away to where the mines and the railways were taking off, namely New Shildon. Many of them became platers, drivers, stokers and, in the mines, it was hewers and tub loaders. My Great Grandfather was living at Winston Gate and to get to work, he had to walk to Staindrop, then across the Raby Estate to Raby Moor Colliery, Cockfield. My Grandparents eventually settled in Cockfield. My brother and I were raised in the village less than a mile from the Haggerleases Branch Line and although not operational in my time, I do remember Lands Viaduct supporting a train service and also the day it was demolished.

Fast forward a few more years, and I began to understand that my family history was forever linked with the railways. My thoughts returned to the little cottage in Hummerbeck and around about the same time, my husband and I became aware of The Friends of the Stockton and Darlington Railway. We took out membership of the Friends and I researched the S&DR line, soon realising that the cottage sat within a few yards of the original 1825 track and at the bottom of the Brusselton Incline. I recalled the number plate on the gable end of the building and the stout build of the cottage. The stone blocks in the garden salvaged when the track was lifted, and the access drive, so straight and flat and so obviously, part of the track bed of the original 1825 Stockton and Darlington Railway Brusselton Incline. It all became clear. What else could it be but the weigh house where the tubs of coal hauled from the coal seams of Witton Park, were halted and weighed. A charge would be levied on the pit owners for the journey up the incline to Brusselton then the tubs travelled on to Shildon and beyond. A 30-year mystery solved. I was delighted that I had discovered an even closer link with the railways; the S&DR no less.

After quite a few house moves, I still live within ½ mile of the line as I have done most of my life. We are both heavily involved with the Friends and so enjoyed assisting with the celebrations for the Bicentenary in 2025. Now, if only I had that numbered wall plate!!

THE PROMOTION OF RAILWAYS IN VICTORIAN BRITAIN - THE CASE STUDY OF THE DARLINGTON & BARNARD CASTLE RAILWAY

Roger Coates

The Stockton & Darlington Railway (S&DR) sponsored Darlington & Barnard Castle Railway (D&BCR) was a 16 mile line opened in July 1856. It gained parliamentary approval in 1854 having failed in the face of opposition from the Duke of Cleveland to get its bill through the year before. The story of Barnard Castle's struggle to get a railway has received the attention of historians.¹ This note will focus rather on the prospectus of the D&BCR and how it sought to persuade and recruit potential investors.

Two prospectuses of the D&BCR survive in The National Archive having been earlier part of the York Collection.² They date from late 1852 and form part of the preparation for the failed bill of the 1863 session. It has not been possible to find an updated version for the successful 1854 application. However, the brief hiatus, little changed fundamentals affecting the prospects of the railway, and the expectations and benchmarks of a national railway investment market suggest that the pitch made for the promotion would have covered the same ground, albeit with an adjustment related to overall cost. We shall consider how these documents aim to persuade and build trust through reference to the people involved, engineering issues, overall

cost, income projections, comparisons with other railways, and most importantly, sponsorship by the S&DR.

People

The front page of the prospectus lists the leaders and legal, financial and engineering agents and advisors. The list of provisional ³ directors was the most important in selling the project as one supported by local people of substance. It contained 16 names, all local to the line - six from Barnard Castle (including J. C Monkhouse, carpet manufacturer and long-time campaigner for a rail link), six from Darlington, and one each from Lartington, Wycliffe and Middleton. The chairman was the Revd Thomas Witham, landowner of Lartington Hall. A potential investor would have particularly noted the presence of the S&DR in Henry and Joseph Whitwell Pease and Thomas MacNay as provisional directors; Joseph & J W Pease as treasurers and Mewburn Hutchinson and Mewburn as solicitors. An investor would have expected this sort of line up for a promotion sponsored by an existing railway.

Engineering

The Darlington to Barnard Castle route taken by the D&BCR was fairly easy with neither tunnels nor large bridges needed. The prospectus promised 'very favourable curves and gradients, admitting of the traffic being wrought with the greatest economy and despatch by locomotive power. It will be a single line constructed on economical principles, and remarkably free from heavy works.'

It also asserted that only 10,000 cubic yards per mile of earthwork would be required compared with other S&DR related promotions:

Redcar line	18,750
Guisborough line	12,093
Wear Valley line	29,000

A final standard reassurance was that 'residential injury has been carefully avoided' - that is no dwellings would be taken for the building of the line.

The experienced potential investor by this time would have been mindful of potential landowner objections and unexpected engineering challenges, but perhaps would have seen the D&BCR having a moderate rather than high downside risk, at least on the engineering side.

Overall cost of construction of the line

The 1852 prospectus confidently stated that the 'cost of construction, including rails, sidings, stations, land, engineering and parliamentary, and law expenses, and a liberal allowance for contingencies has been estimated by the engineer at £77,191, and there is every reason to believe, from the configuration of the country, that this will be ample.' It turned out otherwise. The 1854 Act authorised capital and loans of £133,300⁴ and the final total cost was £147,000.⁵ The chief cause of the increase was the wider formation of the permanent way. The original plan of engineer Thomas Bouch was for a formation width of 15 feet against the usual 19 feet. This was made much of by the opponents of the bill led by the Duke of Cleveland; and, despite expert evidence from Robert Stephenson that 15 feet would be sufficient if the ballast was good, the House of Commons Select Committee in 1853 was crucially affected by the issue and refused to pass the bill.⁶

In the following successful application to parliament, Bouch remained confident that 15 feet would suffice but the D&BCR was taking no chances and instructed him to adopt the wider formation. This added £20,000 to the budget which was further swelled by the costs of the 1853 and 1854 parliamentary contests and the inflation of material and labour costs between the original estimates in 1852 and the actual build after mid-1854.⁷

For railway investors in this period the tendency for actual costs to run ahead of estimate was a common occurrence often caused by the need to conciliate landowners piqued by the loss of power implied by the compulsory purchase of their land for a railway. Given the considerable extra expense incurred by the Duke of Cleveland's opposition to the D&BCR and the very public contest involved, it is perhaps surprising that he was a guest at the opening of the line.⁸ It probably acknowledged local political realities as well as the need to maintain good relations, as other promotions would likely need some of his land.

Projected income

The D&BCR prospectus, in contrast to those of the S&DR and other S&DR related companies, is unusual in having a Table of Existing Traffic going into and leaving Barnard Castle.

Description	Contents	Number passed the gates	Number adopted in calculation of revenue	Weight cwts	Quantity for the year
Carts Wagons	Coals	809	809	15	31,551 tons
-do-	Timber	47	47	45	5,499 tons
-do-	Genl Merch	113	113	45	13,221 tons
Carts	Sundries	428	214	17	9,458 tons
Coaches, gigs, horses, foot passengers		2,002	1,180		61,360
Cattle		221	221		11,492
Sheep		701	350		18,200

The prospectus claimed that the traffic census was taken at a time not more favourable than usual and added that it did not include the short or intermediate traffic between Darlington and the villages and district along the line. It seems that a week's traffic was taken as a multiplier of 52 was used to derive the final column. It assumed the railway would take 100% of heavy traffic and cattle and 50 % of light goods traffic, passengers and sheep.

There followed a Table of Revenue based on the table above.

Articles etc	Quantity per annum	Dues	Amount £ s d
Coal	31,551	1s 4d	2,103 8 0
Timber	5,499	2s 8d	733. 4 6
Merchandise	13,208	2s 8d	1,761 1 4
Sundries & short distances	9,458	1s 2d	556 12. 4
Passengers 1st class	12,000	2s 6d	1,500 0. 0
-do- 2nd class	14,000	2s 0d	1,400. 0. 0
-do- 3rd class	35,360	1s 4d	2,357 5. 8
Horses, cattle, sheep, mails etc			750. 0. 0
Total			11,165. 14. 4

Assuming a standard measure of the day, working expenses are estimated at 45% of revenues, leaving some £6,136 available which would yield according to the prospectus a return of some 7% on a capital of £80,000. Of course, the eventual capital was double that, of which more below.

The surviving minutes and ledgers of the D&BCR provide only glimpses of underlying performance. This is not unusual given that S&DR leased the line. However, some sense of the accuracy of these projections can be got from a bound volume marked “Thomas Macnay Darlington Statistics” in the National Archive.⁹ It covers the Barnard Castle branch revenues from 1856 to 1863 and seems to have been drawn up at the end of, or after, that period.

The aggregate number of passengers was broadly as projected being quite steady at 65,000 per annum. However, the projections as to class mix appeared to differ materially. The projections suggested 20% 1st, 23% 2nd and 57% 3rd class. The actuals turned out at roughly 8% 1st, 55-65% 2nd and 25/30% 3rd, parliamentary and excursions. Actual passenger revenues in the period 1856-63 edged forward from around £4,000 per annum to around £4,500, still well short of the £5,200 projected. It is possible that there were more intermediate journeys or excursions or that there were shifts in the overall market impacting on fares.

Mineral traffic on the D&BCR took a while to develop with revenues moving steadily forward from around £500 to £1,000 by 1860, well short of the £2,013 projected. It then spiked with the opening of the Barnard Castle to Tebay line in mid-1861, before falling away again with the completion in 1863 of the trans-Pennine Auckland coalfield link, with the opening of the line from Barnard Castle to West Auckland. The slow start is unsurprising, as before 1863 it was 30 miles by train from the Gaunless valley pits to Barnard Castle and only 8 miles by cart.

Other traffic did somewhat better with parcels mails and livestock, only a little short of projected. Other goods traffic exceeded projected revenue of some £3,000 by 1858 and reached nearly £5,000 by 1863. Overall, however, performance to 1860 fell well short of expectations with income rising steadily from £7,500 in 1857 to £8,900 compared with £11,100 projected.

Comparison with other railways

Investors used a number of benchmarks to assess a projected railway's prospects. These included cost of construction per mile, projected dividend rate, return on capital described as amount available for dividend divided by capital, and projected running costs as a percentage of revenues. A favourite of S&DR related promotions, including the D&BCR, was revenue per mile per week, which would typically be a two figure sum permitting easy comparison.

The D&BCR prospectus promised revenues of £13.4 per mile per week and aimed to stress the conservatism of its estimates by reference to the figures of seven 'somewhat similar in circumstance' railways - three from Cumberland and Westmoreland, two from Scotland, one English trunk line and one unclear. These ranged between £33 and £20 with an average of £25. It is difficult to see how useful these figures would be to a potential investor other than to suggest the possibility of some sort of upside if the railway progressed and stimulated an increase of overall traffic rather than just taking traffic from other forms of transport. Also, if £13 per mile per week delivered a 7.5% return on capital, then a lower figure would still leave the investor with a return of 4-5%, then regarded a fair return.

S&DR sponsorship

The S&DR was supportive of the scheme from the start and were well represented on the board of provisional directors. The first 1852 prospectus reported that arrangements were contemplated for the running of the line with S&DR locomotives and rolling stock upon favourable terms. However, this appeared to be insufficient inducement for investors as the D&BCR found itself £40,000 short of the subscriptions needed for the parliamentary application to proceed. Whilst the Barnard Castle directors increased their promises to invest, the more important extra push was for the S&DR effectively to guarantee a 4% return for investors and this was communicated in the second 1852 prospectus following a meeting of the provisional directors on 24 December 1852.¹⁰

The second prospectus had a brief summary of the business case with no detailed projections, although it increased the income assumption to £15 per mile per week which, having allowed 50% for working expenses, would yield a return on capital of 7%. However, the key message delivered was that the S&DR would maintain and work the line on equitable terms and that one half of the expense of maintenance and haulage would be held in abeyance until the shareholders of the S&DR had received 4% on their shares. The nett surplus over and above the 4% and the working expenses was to be paid to the shareholders of the D&BCR. The second prospectus concluded by saying that this 'arrangement may be considered as giving the shares the character of a 4% stock in the first instance with a right to all clear profits beyond the payment of the working expenses'. This increase in the scale of the S&DR's sponsorship secured the extra subscriptions needed.

This leasing arrangement - a common mechanism for the funding of branches and extensions of railways - survived the building and opening of the line with dividends in the range of 4-5% being paid until 1858¹¹ when the S&DR and D&BCR amalgamated, with the shareholders of

the latter receiving securities with a guaranteed dividend of 5% until 1 January 1859 and 6% thereafter.¹²

Concluding remarks

The first D&BCR prospectus is, in many respects, typical of many seen by railway investors. Building a railway was generally beyond the means of a private individual or a group of them, hence the need to raise capital from the public and issue a document soliciting funds. The D&BCR was somewhat unusual in setting out the detail of its income projections. Some prospectuses had much less detail. For example, the Barnard Castle & Bishop Auckland Junction Railway, a failed competitor scheme to the D&BCR in 1854 contained no projection of earthwork, income or return; it merely offered a large revenue and a safe and remunerative investment. It can be argued that the D&BCR's detailed projections ended up so wide of the mark as to make the exercise pointless. In many cases the railway investor could make a broad assessment of viability of a promotion without them and be assured at least at the end of the process there would be a railway in the position of a near monopoly supplier of inland transport.

On the other hand, it may be that the investors would look for a more detailed description of existing demand for transport for a mixed traffic promotion such as the D&BCR than they would for, say, a predominantly mineral line. Further, its projections for passenger and non-mineral goods traffic proved eventually to be not too far from the mark. Further, the D&BCR was still a cheap line costing less than £10,000 per mile compared with the average estimated for British railways of the day of over £30,000.¹³

However, the original promotion did not sell itself and the S&DR was forced by investor doubt to upgrade its support to a guarantee albeit at a moderate rate of 4% as announced in the second prospectus. Similar arrangements were used by the S&DR in the promotion of the cross Pennine link, the South Durham & Lancashire Union Railway (SDLUR) which secured its Act in 1857¹⁴.

Notes

¹ The history of the prolonged efforts to secure railway accommodation (as it was then called) for Barnard Castle is set out most fully by T Richardson, *A History of the Darlington & Barnard Castle Railway* (London: W Kent & Co. 1877), pp 21-64 & 77-90 (hereafter Richardson). See also W W Tomlinson, *The North Eastern Railway* (Newton Abbot: David & Charles 1967 edn.), pp 523-4 (hereafter Tomlinson); and J P McCrickard & J G Teasdale *A Ticket to Teesdale* (North Eastern Railway Association, 2024), pp 6-11.

² Both prospectuses are in TNA/RAIL1076/1/6

³ Election of actual rather than provisional directors took place after the company's Act was obtained.

⁴ Tomlinson p525.

⁵ TNA RAIL149/3 D&BCR Finance Committee Minutes 1 August 1857

⁶ Richardson pp 56-58.

⁷ Richardson p 89.

⁸ The Northern Daily Express no. 381 10 July 1856 (cutting in TNARAIL149/26.)

⁹ TNA RAIL667/396.

¹⁰ Richardson p 45. Minutes of the D&BCR Provisional Directors meeting 24 December 1852 in TNA RAIL149/2.

¹¹ D&BCR Minutes of Directors Meetings 12 February 1857, August 1857, and 15 February 1858.

¹² Tomlinson p 562.

¹³ T R Gourvish, *Railways and the British Economy 1830-1914* (London: Macmillan 1980) p 16.

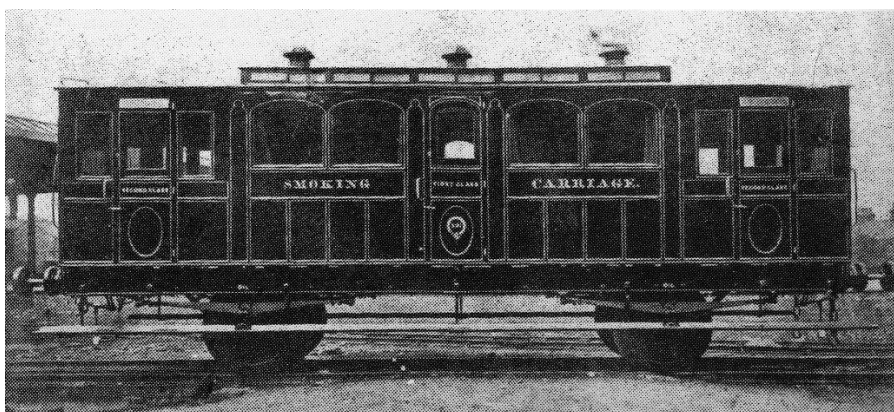
¹⁴ The SDLUR prospectus can be found in TNA RAIL1076/1/38.

MODELLING AN S&DR SMOKING CARRIAGE IN 1:43 SCALE

Nigel Paine

We've all been excited by all the events this year commemorating the bicentenary of the Stockton & Darlington Railway. As a model maker my attention was drawn to see if anything was available in O gauge (1:43 / 7mm:1ft scale) since larger models look great on any mantelpiece or running on a model railway. After a little searching I soon realised that the only O gauge model available was a humble NER P1 chaldron waggon kit. Yes, there were a few OO gauge models available, but they are too small for my tastes.

Curbing my disappointment, I decided that I should do something about it. A nice rake of S&DR carriages hauled by a S&D 4-4-0 such as Brougham or Lowther would look fantastic on any model railway so this is what I have set out to do.



Works photo of Smoking Carriage 221

The Hopetown Museum answered the question of what my first carriage would be. A large mural on one wall depicts locomotive 'Brougham' hauling a passenger train; the first carriage, confusingly numbered 151, has an interesting clerestory roof and the words 'SMOKING CARRIAGE' on the side in a rather funky font! I also had access to a good photograph and detailed scale drawing of this carriage from fellow 'Friend' Peter Simpson.

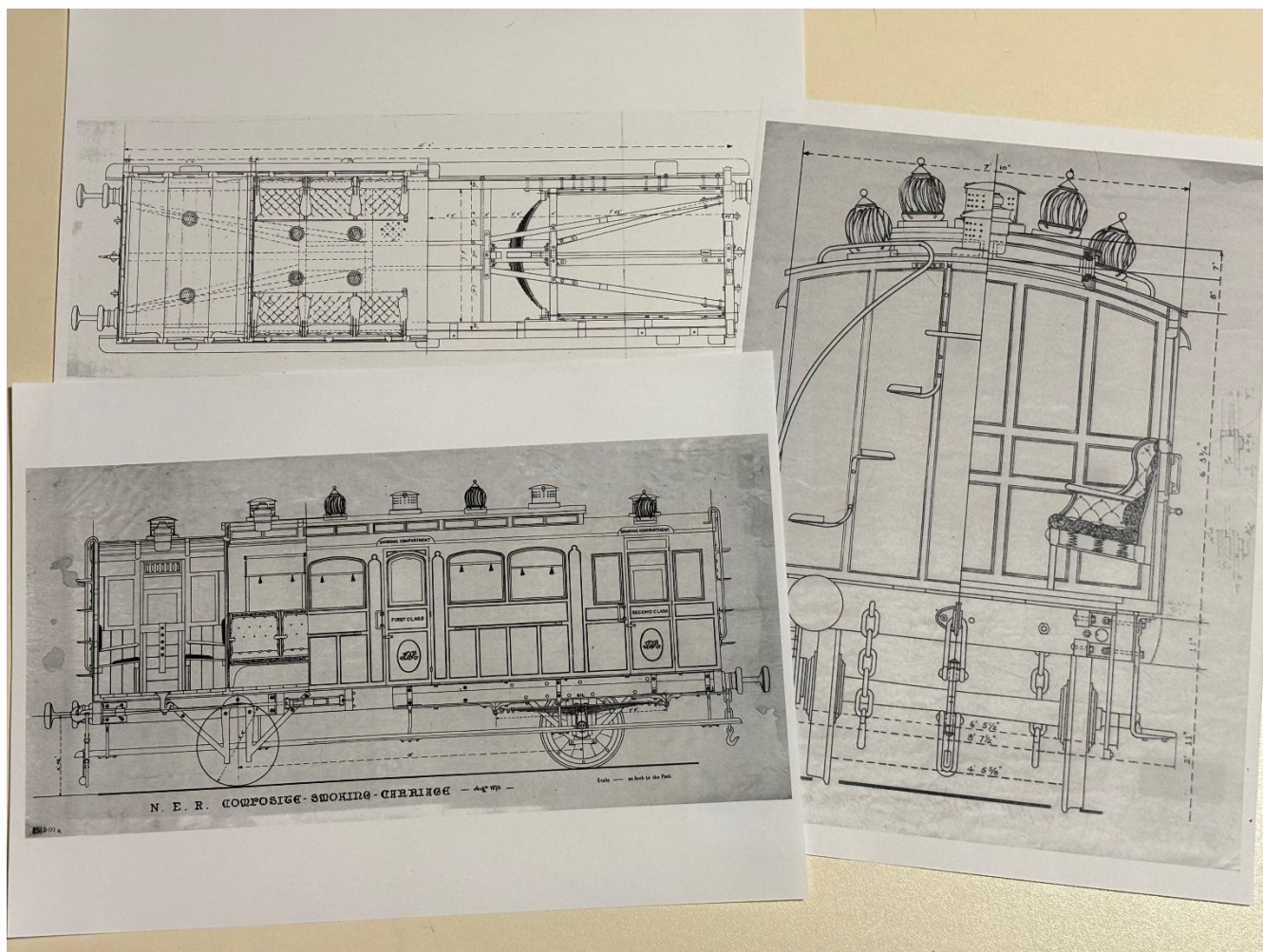


Dr Scott's model of the Smoking Carriage

During my visit to Darlington, I also spotted a model of the exact same carriage on display in the Hopetown Carriage Works. I clearly recall seeing the same as a boy when visiting a highly respected North Eastern Railway modeller, Dr Scott, at his home in Harrogate. It was good to know that some of his models survive and are on display.

It is interesting to note that on 12th April 1838 the Stockton & Darlington Committee resolved to ban smoking in trains stating 'Resolved, that no passengers whatsoever allowed to smoke in or upon the Coach Trains, the practice being both unpleasant and unsafe' (TNA RAIL 667_11). This presumably means that the S&DR had been smoke-free for thirty-three years and the decision to design and construct two Smoking Carriages would have represented a shift in policy, perhaps associated with the NER amalgamation.

After a quick peruse of Peter Holmes' book 'Passenger Traffic on the Stockton & Darlington Railway' (available from the Friends E-shop) I realised that two identical Smoking Carriages were constructed by the S&D at Darlington in 1871 for use on the Stainmore route to Tebay. One of these was numbered 221; a further check in Holmes' book revealed that carriage number 151 (above) was in fact a 5-compartment 2nd class carriage used on the same route. The Smoking Carriages were 27'6" long by 7'10" wide and 12'3" high all in a varnished teak finish with gold lining. The drawings showed they comprised two 8-seat second class compartments 5'6" long, one at each end with a standard roof, either side of a larger 16'6" central first-class saloon with a clerestory – the only S&D carriage to have this feature. All these compartments had spittoons in the floor also making another interesting and somewhat unique feature for my model!



Working drawings for the model

BODY

As mentioned, from 1856 onwards S&D first and second-class carriages had a varnished teak finish with gold lining. I decided that I would build the model out of thin plywood enabling me to represent the wood construction in a genuine way rather than struggle with trying to apply a mock-teak finish. The entire model was drawn using CAD to ensure the parts would assemble easily.

The carriage side comprises four separate layers of plywood making the wall a scale 4" thick. Whilst this is very slightly overscale it is strong enough to ensure that the laminated bodyside remains flat. Slots are included in the design to allow window glazing to be inserted without the need for glue. The inside wall is laser etched (burned) featuring details such as planking, window frames and the leather pull strap for the carriage door windows.

The first job was to apply a suitable coloured wood stain to all the exterior parts of the carriage body in case any glue created waterproof patches on the bodywork and wreck the finish. These layers were then carefully glued together and placed under a heavy flat weight to dry.

Everything fits together using a tongue and groove system to provide further strength and make construction easier. The large first-class saloon accommodates 12 passengers on four beautiful, padded bench seats which are 3D printed using a resin printer. A printed carpet (reduced from a photograph) is glued to a thin plywood base with holes and slots for cast white metal spittoons and the bench seats respectively. The more basic second-class compartments had wooden bench seats with cushions and is a sub-assembly that, like the first-class compartment drops into the model.

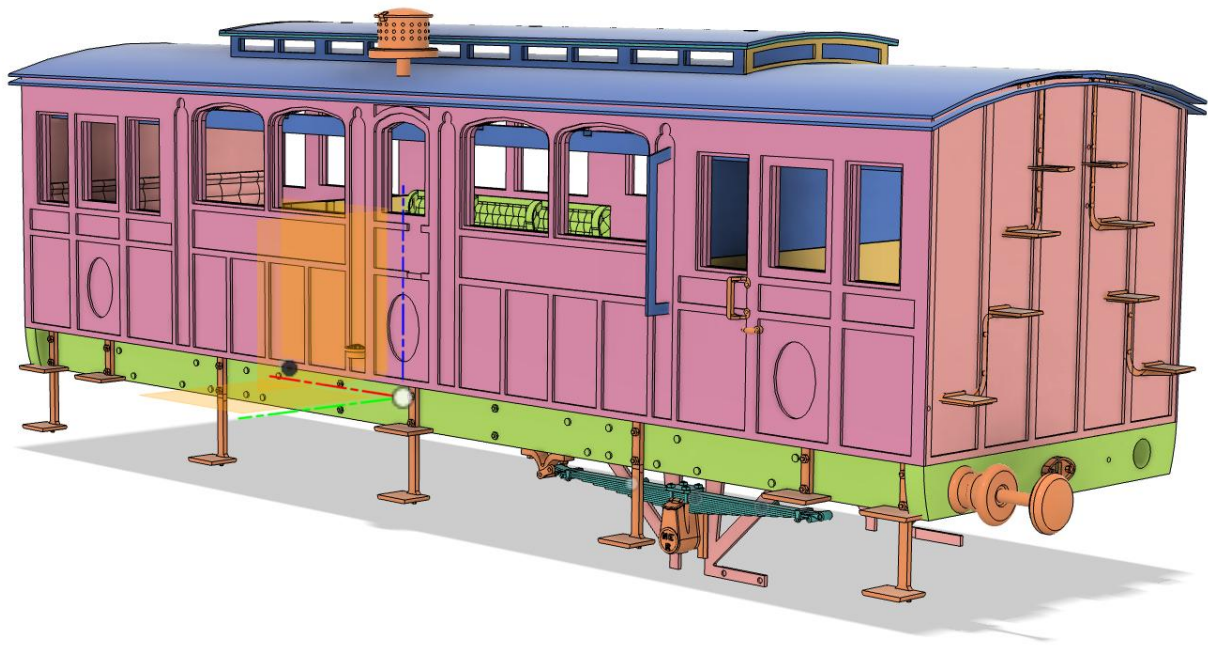


The carriage interior nearing completion – note the spittoons!

ROOF

The curved carriage roof is laminated to make it rigid and less prone to distortion. It includes the top half of the partition walls slotted into the body and held secure without the need of screws or adhesive.

The Darlington works drawings for the Smoking Carriage include a series of eight wind driven turbine roof ventilators. However, the works photograph reveals that they weren't fitted, probably because they would have been a superbly effective rainwater scoop when the train was in motion. A close study of the clerestory reveals a series of sliding windows, an infinitely better way to ventilate the saloon! The clerestory roof does feature three rather decoratively shaped oil lamp covers. By adjusting the photograph exposure settings in Photoshop, a faint outline of a standard oil lamp cover on the second-class roof was revealed. These were also drawn in CAD and 3D printed for the model.



Fusion 360 design

UNDERFRAME

The underframe for my model is designed to represent that of the actual carriage with all wooden trusses laser cut and laminated together as required. The solebars feature bolt heads etched into the ply: for the masochist, it is also possible to fit dummy bolt heads in their place. The solebars are also marked to show where the holes are drilled for attaching the step brackets. The buffer beams feature pre-cut holes cut for the buffers and safety chains.



Smoking Carriage underframe construction

Two centrally mounted transverse springs absorb any shock to the carriage buffers and coupling. I cast these in white metal, and the buffers were lost wax castings for added strength and detail. As per the original, a shaft runs from the buffer to the transverse spring; I attached a small compression spring to the end which was secured and hidden within the transverse spring. A long coupling hook also extends to the centre of this spring. I have used some modellers' licence, creating a channel at the top of the casting to accommodate a functional coupling spring hidden from view.

Etched brass W-irons of my design fit nicely into the underframe and hold everything true and square. They feature sprung axleboxes providing realistic compensation for the carriage to help overcome any unevenness encountered on a model railway. Both these and the springs are lost wax castings.

WHEELS

These carriages had 3'7" disk wheels and, because they were constructed after 1863 they most likely conformed to North Eastern Railway (NER) practice. The NER did not use Mansell wheels but instead used a design manufactured by Kitsons of Leeds. Whilst Mansell's have teak segments forming the web of the wheel, the Kitson design had smaller teak segments inserted between the rim and web held in place by a U-section and retaining ring arrangement fastened by 12 bolts. These are recreated in my model by gluing a 3D printed insert. Even though I say it myself they look rather good and are suitable for all NER carriages.

OTHER FITTINGS

I believe that it's the detail that makes the model which probably goes a long way to explain why I own so few. In the case of the Smoking Carriage, lost wax castings representing steps and brackets fit to each end of the carriage. Similarly, seven different steps and brackets will fit on the solebar when they arrive from the casting company along with the grab and door handles. Screw couplings and safety chains complete the model.



Smoking Carriage model showing the roof and end

TRANSFERS

The transfers are an interesting story since nothing suitable existed until now! I contacted Fox Transfers about printing some for me and it soon became clear that if I wanted them before the 225th anniversary of the S&DR I would have to design them myself. It took three long months to complete the designs using Adobe Illustrator to draw colour layers for every transfer option required.

Probably of greatest interest are the correct styles garter crests. At least three styles existed, namely a blue garter with 'STOCKTON & DARLINGTON RAILWAY' lettering in white and a second with the lettering in gold. The third is the post 1863 garter crest of simplified design with a fawn-coloured garter and 'NORTH EASTERN RAILWAY' lettering in black. The floral design as applied to the early coaches including Nos. 31 & 59 at Hopetown and Locomotion museums is also included.

Attention 'O' gauge modellers - we now have all variations of S&D and N.E.R. sans serif transfers to complete any model you may desire! Two transfer sheets are available: 1) S&DR lettering up to 1863, and 2) S&DR post 1863. The latter is basically NER sans serif lettering with the exception of the unique 'SMOKING CARRIAGE' lettering. Each sheet contains enough transfers of appropriate size to apply to any carriage from Peter Holmes' book or any sans serif lettered N.E.R. carriage. For example, the five compartment second class carriage No. 151 requires no fewer than ten SECOND CLASS transfers, with lettering at scale 2" tall, and slight compression to fit within the door panel.

The resulting product produced by Fox Transfers are an absolute credit to their skill and so good you can read the company name on the garter crest.



S&D Garter Crest transfers – these are 7mm tall

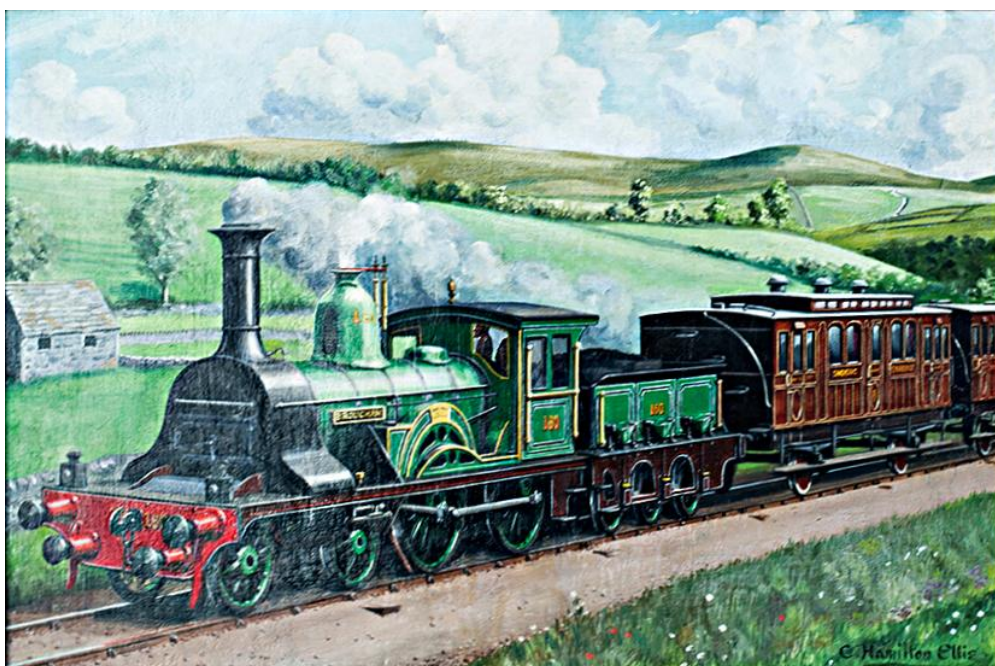
FINISH

As already mentioned, the external body parts were stained before assembly. We are still trying to find the ideal colour since teak comes in many shades and can overpower the delicate colours in the transfers. Once assembled the model is sprayed with a thinned coat of water-based varnish to seal the wood. This dries quickly and once hardened, was 'de-nibbed' to remove any fine wood fibres 'nibs' that might have lifted from the surface. This was followed by further coats of varnish to build up a nice smooth glossy surface to enable the transfers to stick properly. Once the transfers were applied then the model received a final protective coat in a semi-gloss finish.

The carriage roof is sprayed white except for the interior and clerestory sides which remain stained and varnished wood.



The (almost) completed model



The intention is to create something like this in model form. Painting of Brougham with the smoking carriage by C Hamilton-Ellis

CONCLUSION

This model has required a huge amount of rewarding and interesting research. I sincerely hope this article was of interest and some lesser-known aspects of the S&D have come to light. The model goes together well and will be made available as a kit. I also fully intend to design further carriages to create a complete rake. Naturally this will probably be the closest we will ever get to seeing a complete rake of Stockton & Darlington Railway carriages so is an endeavour well worth undertaking.

DATES FOR YOUR DIARY

2nd January	A festive walk along the first three miles of the S&DR, meeting up at the junction of Leazes Lane/ Melrose Drive, St Helen Auckland for 10.30am.
9 th January	Jointly with our partners the Tees Rivers Trust, there will be a litter pick around the Gaunless. Meet in the car park of the SPAR at West Auckland for 10.00am. Picking equipment provided. Tea and refreshments after the work.
10 th January	Meeting of the Brusselton Incline Group for 10.15 am at the Whistle Stop former café, New Shildon DL4 2JE
14 th January	A G M of the Etherley Witton Park Colliery Group, 13.00, Toft Hill Community Centre.
5 th February	Friends' monthly meeting, Darlington Cricket Club, 7pm
19 th February	Trustees of the Friends of the S&DR meeting
5 th March	Caroline Hardie will be speaking to the Rotary Club in Eaglescliffe on the S&DR
5 th March	Friends' monthly meeting, Darlington Cricket Club, 7pm
7 th March	The next Heighington Station fund raising day at Heighington Church – a day of talks and stalls including Women of the S&DR, an update on progress and much more
2 nd April	Friends' monthly meeting, Darlington Cricket Club, 7pm
7 th May	Friends' monthly meeting, Darlington Cricket Club, 7pm
21 st May	Trustees of the Friends of the S&DR meeting
4 th June	Friends' monthly meeting, Darlington Cricket Club, 7pm
2 nd July	Friends' monthly meeting, Darlington Cricket Club, 7pm
3 rd July	The next deadline for contributions to The Globe

A TOPPING SDR200 FESTIVAL FRINGE

Jen Clayton sent us photos of these lovely S&DR themed knitted toppers made by her Mum's knitting group. These were placed around the village green in Haughton in September. This proves that there are many ways that the innovation and impact of the S&DR can be commemorated by local groups. The knitted toppers have been taken down now, but if we are to have a mini S&DR Festival every September, perhaps they'll make a return trip? Meanwhile

the knitted Railway Tavern has now found a new home ... in the Railway Tavern in Darlington, of course!



MEMBERSHIP

Our current subs are:	
Under 18:	FREE
Individual:	£15
Unwaged/retired:	£10
Joint: (2 adults at the same address)	£24
Corporate:	£50

Thank you to those members who opted to pay/renew their membership via standing order. This saves me a lot of time each year contacting members to renew their membership. Could I please ask those members who do not renew via standing order to consider doing so in the future? This is our preferred method of payment.

Fees can be paid at any time if you have forgotten. You can take out new membership using the Friends' web site shop. When you join you will be given a password to access the members only section of the web site. Our membership fees contribute towards our projects ranging from conservation, publications, interpretation, site maintenance and awarding grants to local groups.

You will receive a PDF copy of The Globe and a hard copy if you express a preference for this. You will also receive preferential invitations to events and S&DR related outings. If you have any questions regarding membership, you can contact Peter Bainbridge, the Membership Secretary on: membership.SDR1825@virginmedia.com.

Peter Bainbridge, Membership Secretary



Friends gather to admire the sleeper blocks they have placed alongside Tornado Way in Darlington. Much has been done this year to return railway character to the S&DR Corridor. Do join us for the next leg of our journey in 2026.

The Globe is edited by Caroline Hardie. It is named after Timothy Hackworth's locomotive which was commissioned by the S&DR specifically to haul passengers between Darlington and Middlesbrough in 1829. The Globe was also the name of a newspaper founded in 1803 by Christopher Blackett. Blackett was a coal mining entrepreneur from Wylam with a distinguished record in the evolution of steam engines.

All text and photographs are copyright Friends of the Stockton & Darlington Railway and authors except where clearly marked as that of others. Opinions expressed in the journal may be those of individual authors and not of the Friends of the S&DR. **Please send contributions to future editions to caroline@aenvironment.co.uk. The deadline for the next issue of The Globe is 3rd July 2026.**

The Stockton & Darlington Railway

Opened in 1825 and running 26 miles between Witton Park in Co. Durham and Stockton via Shildon and Darlington, this is where the modern railway network was born.



**Friends of the Stockton & Darlington
Railway.
WWW.SDR1825.co.uk**

