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Issue 9
Winter 2003–4

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for boiler
returned*

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*More news
inside*



Journal of The A1 Steam Locomotive Trust

Charity regd no. 1022834

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Darlington Locomotive Works

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Works normally open to the public 2nd Saturday in the month 11 00–15 00; you need first to buy entry to Darlington Railway Museum next door. Covenantors can visit at other times by arrangement, if open. Ring the works on 01325 4 60022.

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Issue 9

Winter 2003–4

Editor: Gerard M-F Hill

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Peppercorn A1 60156 *North British* in Carnforth shed yard one Sunday in 1954, having for some reason been taken off its train on the West Coast Main Line (photo: Ray Sayer)



Mrs Dorothy Mather is a very special person and it was my pleasure to interview her: you can read all about our president on pp. 17–19. With her on the cover is Alan Milburn MP (*see p. 7*). No. 60163 *Tornado* is at the centre of all we do, but it's people that make any organisation and the Big Picture reinforces that message.

Much has happened since the Convention (report on pp. 12–13 for those who couldn't be there). We have news of the boiler and new people; and details of the bond issue will go out shortly. I regret to report the sudden death of Paul Pattinson, brother of Neil, the helpful printers of *Top Link* and much else for the trust.

Engineering news (pp. 7–11) could use the same heading every time: **Getting it right**. By now it must be clear to all how much trouble is being taken to make this the best A1 ever built. More pictures will be found on our website. In the same spirit, the History pages correct and clarify topics previously aired. My thanks to all who sent details of that run on new year's eve 1965/6 by 60145 *St Mungo* – more will be welcome, as also on the A1s that worked out of Glasgow Polmadie on Birmingham–Glasgow trains. Thanks go to all who've written or supplied pictures.

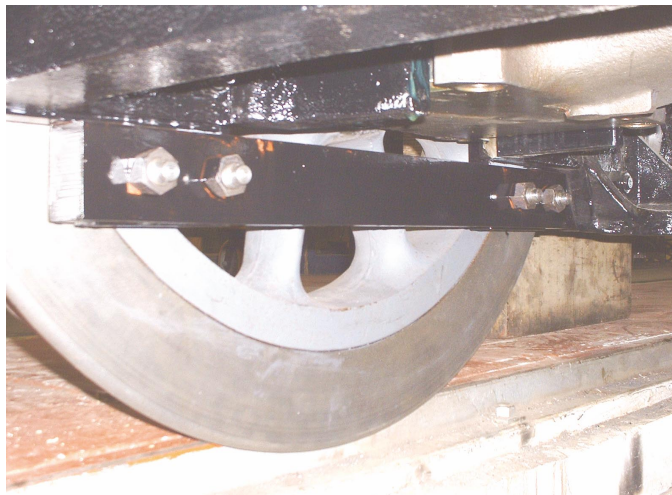
There's no accounting for accountants, so I was glad to put in a helpful letter from John Knowles, rejigging the Financial Statement (p. 26). With this issue are flyers for the LNER Coach Association and our Spring Day Out. Book now!

Gerard M-F Hill

Diary dates

Our Spring Day Out is on 24 April at the Nene Valley Railway (flyer in this issue). The Annual Convention is on 9 October at Darlington.

Right: How a bogie hornstay looks when it's in place. (*photo: David Elliott*)



BOILER ITTs RETURNED!

In December 2003 we issued Invitations to Tender (ITTs), to design and build a boiler for the A1 locomotive, to all the pre-qualified suppliers. All of them had replied by late January and the trust has set up a specialist panel to assess their responses.

Specification

The boilers for the original A1s, built to LNER Diagram 118, weighed 28 tons 10cwt and worked at 250lb per sq. in. pressure. The new boiler will follow that design very closely, but with

- modern-specification materials, not those available in 1948;
- welded – not riveted – construction;
- light-oil firing, to be supplied by the trust's nominated sub-contractor, DLM of Winterthur, Switzerland;
- a small number of design changes to assist operation and maintenance.

The use of light oil fuel

We can expect light oil fuel to increase operational flexibility and vastly reduce the risks of pollution or lineside fires. In conjunction with water treatment, it should extend boiler life significantly and cut maintenance and overhaul costs.

The trust has a confidential budget for this procurement, but it is too early to say how much the boiler will cost. A great deal of work and study has gone in to the boiler specification, particularly on the oil-firing, over the last two years.

What happens next

Because this is a competitive procurement, the trust will not release the names of pre-qualified suppliers or anything about them. After careful evaluation of bids, we expect to announce the chosen supplier in the spring.

The chosen design will need to get design approval from all the relevant authorities before manufacture of the boiler can begin. A further announcement will be made when the winning bidder is awarded a contract.

If the bond issue is as successful as we hope, the boiler will be completed in early 2005, but we are acutely aware that the responsible bodies in this country have never been asked to certify an all-welded, oil-fired boiler for a standard-gauge locomotive, so no-one can be certain how long it will take. All the indications are that the regulatory authorities will be as helpful as they can.

BOND NEWS

When this was written, the prospectus for the Bond Issue was being typeset. It is expected to reach all covenantors in February 2004, under separate cover.

BOARD CHANGES

David Burgess and Graham Nicholas have been appointed to the board. Rob Morland, author of the Project Plan, has stood down after nine years' service, but he will still provide his special expertise to the Technical Advisory Panel.

TECHNICAL ADVISORY PANEL

Some time ago, the board perceived the need for a body of established experts in various fields, specialists who could be called upon to look into specific issues and offer advice.

The Technical Advisory Panel (TAP) met for the first time on Friday 23 January. Its primary role is to advise the Professional Head of Engineering (to be appointed) and, under that person, all members of the technical team.

The panel will also act as long-stop or safety net in decisions on technical matters. Since major engineering decisions come before the board, members of the TAP will also be available to all members of the board. TAP founder-members and their disciplines are:

Malcolm Crawley, Mechanical

Doncaster premium apprentice 1947–52; retired. BR engineer; worked on design/construction/maintenance of A1.

Dr Mike Reece, Electrical

Advises GNER/HSBC on Mk IV coaches (technical aspect). Was Director of Research and Development, GEC Alsthom.

Peter Townend, Running

Doncaster premium apprentice, 1941–6; career BR engineer in motive power. Retired.

John Bilney, Oil-firing

After an engineering degree, served in REME (with oil-fired locos); fuel technologist with Shell Petroleum. Retired.

Tony Broughton, Certification RSSB

BR engineering apprentice, Darlington Works and elsewhere; career in BR, responsible at senior level for diesel/electric traction. One of three to form Halcrow Transmark steam loco VAB in 1993. Retired.

Graeme Bunker, Certification Network Rail, and operating matters

Starting from signalman, rose through Railtrack/Network Rail to be Route Development Manager. Currently also a fireman on main-line steam operations.

Peter Howe, Testing

Began his railway career in 1938 as LNER apprentice; worked on the Dynamometer Car, including tests of the A1.

Volunteers needed!

Although new volunteers have stepped forward recently, more are still needed to manage the accelerated build programme, especially in administration, marketing and project management.

Qualified candidates with appropriate experience are invited for advisory positions on the Technical Advisory Panel. Specialists are needed to advise on air brakes, rolling stock (for the water carrier), operations and procurement.

A number of people responded to the trust's advertisement in *Professional Engineering*, journal of the Institute of Mechanical Engineers, for a Professional Head of Engineering to join the board; candidates are being interviewed.

MP PRAISES A1 PROJECT

On 22 January 2004, The A1 Steam Locomotive Trust welcomed the Rt Hon. Alan Milburn, MP for Darlington, to Darlington Locomotive Works to see *Tornado* and meet Mrs Dorothy Mather, President of the trust (*see front cover*).

Alan Milburn was clearly genuinely interested in what he saw and heard. On seeing 60163 *Tornado*, he commented: "There is a tremendous amount of hard work and effort going into the trust. Darlington has historic links with the

railway. And I am looking forward to the day that *Tornado* is up and running."

Mark Allatt added: "The trust is delighted that Alan Milburn, our local MP, has paid a visit to Darlington Locomotive Works to see the progress that has already been made in constructing *Tornado* and the challenges that lie ahead to complete the locomotive. We appreciate Mr Milburn's offer to assist in any way possible."

Tyne-Tees Television news and the *Northern Echo* both featured the visit.



Above: Founder-members of the Technical Advisory Panel at DLW, 23 January 2004: left to right, John Bilney, Peter Townend, Malcolm Crawley, Mike Reece, Tony Broughton and Graham Bunker, with Bob Bramson of our VAB (*photo: R. J. Morland*)

ON THE SHOP FLOOR

Frames

Some work was needed to true-up the footplating. The four brackets around the firebox have been refitted to correct the slight over-width of the footplates.

To finish attaching the radius-link brackets, four special countersunk fitted bolts were made and secured in place.

Wheelsets

The crankpins of the coupled wheelsets have been trued-up by North View. The third set, delayed by rush jobs and by a trained operator leaving to set up in business, was done on 12 January; all three wheelsets are now back at DLW.

The manganese-steel liners have been fitted to the Cartazzi spring guides (now machined). The Cartazzi assembly is complete except for the cast axlebox covers; they should be ordered shortly. New liners have been machined and fitted to the spring planks. Final machining of the two bronze wedges will ensure both are in the neutral position when the wheelset aligns straight ahead.

Bogie

The bogie hornstay studs have been made and fitted, allowing the hornstays themselves to be fitted too.

When the bogie turns, all eight bearing surfaces now touch at the same time. The difficulty of achieving this may explain bogie frame cracks on A1s. Work on the bogie frame is now

complete, but we still have to make and fit spring gear, side-control springs and de Glehn side bearers, which transmit weight from locomotive to bogie.

Some bogie spring drawings are missing, but we have enough information from other drawings to fill the gaps. It is best to fit the springs later on.

VAB

At the Convention it was announced that Bob Bramson had 'ticked the boxes' for all the axle bearings and cannonboxes. He and our VAB generally are very much in tune with what we're doing: we have an A1 relationship.

Motion

Ufone are finally nearing completion of the inside connecting rod and strap, and delivery was expected by mid-January.

Following a detailed review of the way to set up motion and valves, we have decided to mock up the valvegear. We can then determine true lengths of links needed for optimal valve events.

When earlier A1s were built, small variations in rod length were adjusted in the blacksmith's forge. Today this is frowned upon, as it can adversely affect the metallurgy, which was carefully controlled in forging and heat-treatment. We will have each component machined to the exact length needed; the forgings have enough spare metal to allow this.

Final fitting of the slidebars – which will enable crossheads to be

properly fitted to the connecting rods – is complete, apart from drilling the bolts to take split pins. This will be done when the crossheads and pistons have been installed permanently and the bolts torqued up to the required reading.

To fit the slidebars meant stretching a thin steel wire from cylinder front to a point roughly in line with top dead-centre of the coupling rod big-end.

A set of fine adjusters at each end of the wire enabled it to be set up true on the cylinder centreline, using inside micrometers to check how far the wire was from the cylinder bore at the front and the stuffing box bore at the rear.

A cunning plan by Ian Howitt made it easy to get accurate readings. He mounted the wire in insulated bushes and connected a buzzer between wire and frames. If the micrometer touched the wire, with the other end touching the cylinder, the buzzer went. This was more reliable than trying to spot when the micrometer made the wire move.

With the wire set true on the cylinder centreline, the upper slidebar was temporarily bolted to its bracket and the cylinder with undersize bolts and temporary spacers, adjusted to give the required distance from the wire. The spacers were accurately measured, and permanent ones machined from brass plate.

The slidebars are set from 0.004" to 0.008" closer to the wire at the front than at the back. This allows for cylinder

expansion when hot, which will bring the bars parallel to the centreline.

The permanent spacers were fitted using the temporary bolts. Each slidebar was adjusted side to side, to achieve symmetry about the wire, and then set to give a 1/16" gap between the front of the slidebar and the cylinder, to allow for expansion. To permit this, the front holes in the slidebars are 1/16" oval.

The temporary bolts were tightened thoroughly and then removed one at a time to allow the holes to be drilled out and reamed to take the permanent bolts. This was done using the large drill with the usual jury rig to orientate it and apply feed reacting off the workshop floor.

Cylinders and valves

Ufone machined all six valvechest liners, but one had to be scrapped after a machining error. Ufone apologised, we sent them the pattern and the replacement was collected on 20 January.

Once it has been inspected, we intend to bring in cryogenic specialists to shrink the liners into the valvechests.

North View have been machining the cylinder covers, but our plan to use a tap to cut the 2³/₄"-diameter threads for the pressure-relief valves has been thwarted: there is a big risk of breaking the tap because the SG iron is so tough.

They are sending the covers to a company with a CNC milling machine that can thread-mill the holes. The per-

manent cylinder-cover and valvechest-cover studs have been fitted.

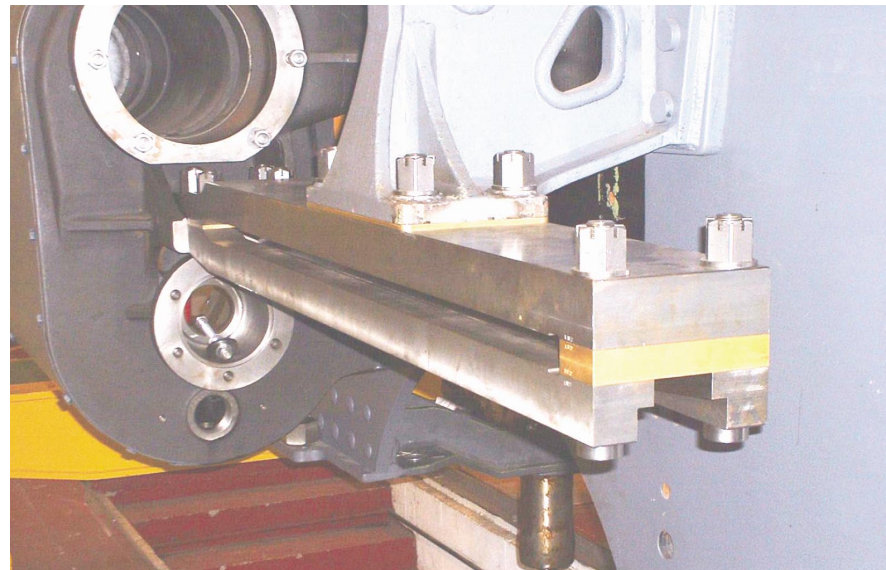
We are working on an electric rotator to turn the coupled wheels as we set up valves and valvegear. This is possible because roller bearings, unlike plain ones, still work if the wheels are off the ground. It is better than moving the loco back and forth, especially as a full turn of the wheels moves it almost 21ft – perilously near the end of the shed.

We have added more tooling for the 50-ton press and used it to separate the outside pistons and crossheads, press them together and separate them again, to ascertain how much metal to remove

from the piston-rod ends to ensure final assembly with the required 50-ton force. North View are machining the pistons for this, and also oilways and grooves in the crossheads. The next big task is to fit coupling and connecting rods.

Other bits

At the works, the volunteers are making good progress on the cylinder drain-cock gear. Quotations are sought for completing the cap riveting on the cab. Elsewhere, much time has been spent on cutting an internal screw thread, 17" x 2 1/4" with two starts, in a bronze casting, part of the reverser gear.



Above: Slidebar, brass spacers, high-tensile bolts and slotted nuts. (photo: David Elliott)

BOILER

The formal Invitation To Tender (ITT) documents (*see p. 5*) have two main engineering inputs: the basic scope and a detailed interface specification.

The latter describes and dimensions all the places where the boiler touches other components or the loading gauge. With its 69 drawings, this has required substantial engineering input.

Injectors

We have been fortunate in securing two unused Davies and Metcalfe 12mm LM (Lifting Monitor) injectors, plus a set of spare cones. Part of a batch made for ex-Barry locos in the early 1980s, they were not used in the end by their owner.

LM injectors were used on Bulleid types and a few ex-LNER B1s, where they were very successful. Other B1s did not get them, as withdrawals had started by that time. Our VAB has approved their use on the A1.

WORKS ACTIVITY

Mike Wood, Works Manager, is looking for volunteers to work as mates alongside skilled professionals. He'd like more hands in the workshop – on the drain-cock gear – and on other tasks.

With Darlington Council, we have applied for Lottery help with external renovation of Darlington Locomotive Works. Built as the Stockton & Darlington Railway's Hopetown carriage works, the building has just been surveyed for the purpose of the application.

LM injectors are designed to be pre-set: turning them on consists simply of fully opening water and steam valves. There is no need to fine-tune them to avoid water dribbling or steam leaking.

We intend to make a cardboard mock-up to help identify the best place to mount them. These injectors, weighing over a hundredweight (112lb) each, are tricky to handle in confined spaces.

A1s (like most express locomotives) had a live-steam and an exhaust-steam injector. The latter can use live steam if the engine is not under power.

An exhaust-steam injector can save 5–6 per cent in water and fuel, since it uses steam that would otherwise go straight to exhaust.

In practice, savings can be much less: the device is complex and temperamental, and needs a long period of steady power output to work efficiently. The TAP may be asked to advise on what arrangement is best.

Works visits

Covenantors are welcome to visit Darlington Loco Works to see the progress on *Tornado*. Please check beforehand that the works will be open on the day and at the time you intend to visit, and that no engineering work is planned that might preclude your visit: ring 01325 4 60022 or 07790 012410 (mobile).

ANNUAL CONVENTION

On 4 October 2003, covenantors were met at Darlington Locomotive Works by Joan Dodgson and Marjorie Black. Farthest-travelled visitor was Stephen Williams from Auckland, New Zealand.

All the way from Auckland, Co. Durham with the theme ‘work in progress’, David Elliott brought us up to date (*see pp. 7–11 for updated report*).

From the office roof, Rob Morland photographed us. All then decamped by vintage bus to Blackwell Hall, where Mrs Mather joined us for lunch.

Afternoon

With the chairman as compère, each of the board spoke to their remit. Perhaps most eagerly awaited was the financial news. Barry Wilson and Andrew Dow have been busy filing the five keys needed to unlock a commercial loan:

- audited accounts
- detailed assessment of requirements
- ability to service the loan
- security for the loan
- business case for operations

It is easy to see how much work could be needed to satisfy business people on each of these points, even if in the end it is largely a question of ticking boxes.

One of the hardest tasks has been to get written quotations for complex engineering tasks: suitable firms are unwilling to spend time and money on quoting for a job that they may not get.

The Charity Bank acts as a portal to many commercial lenders. We plan to negotiate a loan of perhaps £1.75m in 2004, to complete 60163 in three years, not eleven, at reduced cost and risk.

Rob Morland ran through project plan changes. Of its 386 tasks, 127 were done; 47 more had been started. We still needed another £1.47m to complete 60163 in coal-fired form; dual firing and second tender add about £600,000.

Mark Allatt said we were close to completing the quality plan and recruitment of engineers (*see p. 6*). The new organisation, thanks to the work of Tony Roche, has already made a difference to documentation and working with the VAB. Safety-critical equipment must come from suppliers approved by Network Rail, with VAB approval. Our procurement procedures have to ensure that all elements of design and manufacture meet ISO 9000.

Andrew Dow explained that the boiler was intended to give suitable performance over 50+ years. Construction is only one-third of the life-cycle cost: the rest is in operation and maintenance.

A Derby firm is giving advice on procurement. Bidders will get fair treatment but must pre-qualify on the basis of three criteria:

- 1 their quality systems
- 2 their proven ability in redesign work and providing supporting calculations
- 3 their experience.

Fuel

Websites for bituminous coal indicate that this fuel is now expensive, variable in quality, dirty, corrosive, abrasive, costly to handle, costly to clear up and liable to set fire to things downwind of the exhaust.

In contrast, websites for light oil show it is cheaper, clean, non-corrosive, readily available, easy to handle, leaves no residues and produces no sparks.

Oil-firing

In view of his experience in designing both the highly successful new Alpine rack tanks fuelled by light oil and the German class 52 oil-firing conversion,

the trust went to Roger Waller in Switzerland. Over a year ago he was given a study contract to examine the feasibility of oil-firing a Diagram 118 boiler.

This study concluded that the oil-firing equipment now fitted to the class 52 2-10-0 would work – might work even better – in an A1 boiler. Since then, a Hazard Identification Document has been submitted to Railway Safety.

It is the revenue enhancement that oil-firing gives that has made possible the case for the accelerated funding.

In conclusion, Mark Allatt emphasised that, if we are progressing slowly, it is only because we have too few people and not enough money!

Question-and-answer session

1. Any news of the superheater header?

DE: The faulty one was scrapped, at no cost to us. A new one will be ordered as part of the boiler specification.

2. Why has the oil-fired Class 52 been withdrawn from service?

AD: It had trouble with harmonic vibration, mainly in the cab, successfully treated by sound attenuation. It was taken out of service for other reasons.

3. There is no mention of dual firing in the latest edition of *Top Link*.

AD: The expectation is that *Tornado* will be built as an oil-fired locomotive capable of reverting to coal-firing.

4. If the locomotive were designed for oil-firing only, how much could be saved, say, on the tender?

DE: The main savings would be on the ashpan and grate – about £25,000. As the option of coal-firing is to be kept open, there is no saving on the tender.

5. In the business case, what work do the board think the loco will get?

AD: There are a few contracts in the steam world; altogether, eight or nine types of operation have been identified. There are likely to be some one-off jobs.

6. Will we find firemen for oil-firing?

AD: We know many people are interested in firing an oil-fired locomotive.

7. Have the board tried to identify wealthy people to provide funding?

MA, AD: We are constantly looking!



DARLINGTON LOCOMOTIVE WORKS

CHAIRMAN'S COLUMN



Firstly I'd like to wish you all a happy and prosperous New Year, a year that will be momentous in the life of our project. At our last board meeting, it came to our attention that the trust has now raised – and spent – over £1 million on the A1 Project. We are now raising over £120,000 per year through covenants, dedicated covenants and donations – and thank you all for your continued contributions.

However, the ever-changing regulatory regime on Network Rail necessitates additional certification, testing and safety equipment. As a result, we still need to raise another £1.25m to put *Tornado* into main-line service.

As the report of last October's Annual Convention (*pp. 12–13*) explains, the trust intends to raise these additional funds through more covenants, a bond issue and a commercial loan. Further details of the bond issue will be sent out shortly to all covenants. I urge you to give this issue as much support as you can.

In parallel with raising the funds for our accelerated build programme, the trust has also been taking active steps to increase the number of volunteers holding specific board and management responsibilities. As mentioned elsewhere in this issue, the board has recently been joined by David Burgess (Company Secretary) and Graham Nicholas (Quality). In addition, John Larke has taken on the responsibility of co-ordinating our administration and attends board meetings.

We are also talking to a number of other interested parties, but once we have the enhanced funding, it will be all hands to the pump. If you think you have the skills, experience and time to help, please get in touch – *Tornado* needs you!

And finally I'd like to thank Rob Morland for all his hard work on the project plan and many other areas over the past nine years. Although he has stepped down from the board of the trust, he will continue to be involved in the project through the TAP.

Mark Allatt

The Big Picture (*pp. 14–15*)

People power! Covenants and Peppercorn A1 60163 seen at the Annual Convention on 4 October 2003. (*photo: R. J. Morland*)

Left: Flowers from the trust for Mrs Mather's birthday. (photo: R. J. Morland)



PRESIDENT'S PAGE

Anyone who was at the Annual Convention would have seen the diminutive figure of the A1 Trust's President, Mrs Dorothy Mather, but they might have wondered about her connection with the A1. For their benefit, it seemed high time that Mrs Mather had a feature to herself in *Top Link*.

She lives in a broad, tree-lined street, just off the main thoroughfare of one of Yorkshire's prettier villages. On the outside, her home is tasteful, discreet but modest – rather like Mrs Mather herself, a quart of best quality in the proverbial pint pot.

A world of railways

Her father was a hydraulic engineer with the LNER and she was an only child, born Dorothy Patricia Louch. She grew up in a railway family and naturally every holiday began and ended with a train journey. They lived in a village near Doncaster and she went to private schools. Life was uneventful until her father died, aged only 49.

When the Second World War began, she helped provide refreshments for the many military convoys that stopped in Doncaster at all times of the day and night. Like the other volunteers, she paid a weekly subscription towards the cost of the soldiers' food and drink, as well as giving her time.

That traffic had begun to slacken when she was invited to lunch one Saturday by her best friend, whose father was chairman of the regional coal board. When he found that she was not working, he invited her to come and fill one of their vacancies. Dorothy went home to tell her mother that she

Right: Mrs Mather at the 2000 Annual Convention, at the controls of the Matterson jacks, ready to lower the frames onto the axles. (photo: R. J. Morland)



THE PRESIDENT

had got her first job, at the coal board office in an old manor house at Warmsworth. She rose to become Assistant Surveyor.

Arthur Peppercorn

With that experience behind her, she moved to Doncaster Works drawing office. Long before this, though, she had already met Arthur Peppercorn socially. He was an able and engaging man who had every quality needed to reach the top, except for self-advertisement. Despite this, he succeeded Edward Thompson as Chief Mechanical Engineer of the LNER on 1 July 1946. He was an effective but considerate boss who never raised his voice or swore.

With their great sense of fun, he and Dorothy had soon hit it off – she describes him as “a lovely man” – and they eventually married in 1948. Within weeks, the family doctor took her aside to say she should prepare for the worst: “Arthur’s heart might give out at any time. I don’t want to tell him: he’s got enough on his plate.” The post of CME was stressful anyway, even without the turbulence caused by nationalisation. By this time, the Peppercorn A2s and two A1s were already in traffic.

For 2½ years Dorothy lived with the knowledge that her husband might die at any time. They were both very busy, attended railway occasions together and visited his family in Herefordshire; Arthur had several brothers and sisters. Leaving the Eastern Region of BR in good shape, Arthur retired at the end of 1949, much loved and admired, only to die prematurely in 1951.

Bill Mather

After the joy of being married to Arthur, life was bound to seem empty. Still, Dorothy pressed on with life. A few years later, through a friend she met Colonel W. H. Mather, OBE, TD and ex-LNER. In due course they married, bought a country house near Stokesley and settled down. Like Arthur Peppercorn, Bill Mather was a thorough gentleman with a strong sense of duty.

Dorothy recalled, when he was president of the local agricultural show in 1959, that they were up very early that morning. By 7 a.m. they were walking round, making sure they spoke to every exhibitor. People were delighted and one said to Dorothy, “This is t’ first time we’ve ever seen t’ president. They allus sweep in five minutes before t’ lord-lieutenant arrives.”

As Bill’s health failed, they moved to a more modern house and Dorothy nursed him. He died and she became a widow again, but now with an even larger circle of friends. She became a byword for a busy life among Bill’s many nieces and nephews.

MRS DOROTHY MATHER

The A1 Trust

In August 1993, I wrote to Dorothy to suggest a meeting at which we could explain to her all about the A1 Project. She was sufficiently impressed to join us informally and from there her involvement grew.

She was there at BSD Leeds on 13 July 1994 to start the CNC machine that cut *Tornado*’s frameplates, at the trust’s first convention that September and at Tyseley in December for the ceremony marking erection of the frameplates under the supervision of Bob Meanley.

It was 1993 when I first met Dorothy, and she has been at every major A1 Trust occasion since then, always immaculately dressed, always interested, kind and courteous to everyone she meets. In September 1995 she became joint vice-president, and later president.



Not just a figurehead, she has done a tremendous job for the trust in countless interviews with press and television. She is quite as vital as our ISO 9000 quality standard because, if *Tornado* is good enough for her, it’ll be good enough for Arthur Peppercorn.

She remains alert and active, making light of periodic ill-health. After our first convention she wrote, “I went to sleep dreaming of what Arthur would have thought about it all. He would have been so touched and proud.”

That is how we feel too, with Mrs Dorothy Mather as our president. Long may she remain so!

Gerard M-F Hill

The Editor welcomes letters or e-mails from covenantors, especially if they are succinct and polite, but reserves the right to edit for length and content.

First comes confirmation that, as our Director of Engineering would say (for he is fluent in French), Plus ça change, plus c'est la même chose.

Boat of Garten, Inverness-shire
Dear Mr Hill,

As always, I read *Top Link 7* with interest but when I read in 'Peppercorn pedigree' that, after the pacifics gained long-travel valves, they became class A3, I gulped. There was a lot more to the change than that!

I was interested to read of the problems of the Cartazzi boxes on sharp curves. I was in Doncaster just after the roller-bearing A1s had been built, but I do remember being told to go to the New Erecting Shop to see the boxes on one that had just come in. The manganese liners had been seizing in the horns, and they looked like ploughed fields!! They all had to be reground and refitted with additional clearances.

Somehow people will never learn, and there were similar troubles with the Britannias! Yours sincerely,

Allan Garraway

Ed: I'm sorry if that bit of potted history misled anyone. Much else changed, but the Gresley A1s became A3s when they were given 220lb./sq. in. boilers.

by e-mail

Dear Sir,

I read the latest *Top Link* with interest. In the same post came *Rail Express*, where a piece headed 'Mail on rail to end' gave me an idea for the 2nd tender.

The article hinted that, rather than see it go to a competitor, Royal Mail would rather scrap redundant stock – amongst it, a lot of 100mph bogie vans based on the BR Mk 1 Full Brake, with a capacity of 8 tonnes. Now I know 8 tonnes equates to only about 1500 gallons but the vans have these advantages:

- o they need no new full safety case
- o they are express-speed rated
- o their Mk 1 profile would match most charter stock
- o they could be picked up cheaply (or donated for positive publicity?)

A modified safety case might be required to cover cargo distribution. To carry water, either a single tank (segmented to reduce free-surface effects at speed) or several 'cubes' could be fixed permanently or temporarily to the interior. As these vans carry Royal Mail trolleys, I imagine they have tiedowns to restrain loose trolleys.

A 'cube' is a 200-gallon (I believe) plastic container framed in an aluminium cage, used in the chemical industry for storage. Empty cubes could be quickly exchanged *en route* for full ones, allowing exploration of routes without normal watering facilities.

Victoria, Australia

Dear Mr Hill,

I wonder whether the A1 Trust is aware of Arthur Peppercorn's link with Australia? If I am correct – you should verify this with Mrs Mather [*Ed: I did*] – his maternal grandfather was John Watts, a West-country émigré to newly-independent Queensland.

In 1866 he became Minister for Lands and Works. One of his early tasks was to ensure completion of the Ipswich to Toowoomba railway which, successfully achieved, opened up safe travel from the Darling Downs to the coastal plain. His account gives graphic details of the problems to be overcome.

John was a doctor's son with a wealth of practical experience, who was not accustomed to being thwarted in his endeavours by loss of supplies at sea, poor-quality materials or last-minute disastrous heavy rain. He travelled on the footplate of the lead engine on the pilot train at the vice-regal opening of the line, and oversaw the return to the track of a derailed second locomotive on each of the trains on the journey.

He was primarily a (successful) pastoralist and must have passed some of his organizational skills and innate mechanical competence to his grandson.

Yours sincerely,

Ben Wadham

(antipodean, somewhat distant cousin of Dorothy Mather)

Two 'tenders' could be towed, or one at each end of the train for run-round or reversal. They could be hired to other main-line steam operators and livery could be maroon, blue, green, black – whatever looks best with an A1.

The amount of work is minimal compared to a new build. I hope this idea is of interest and you can pass it on to the right people to review. Yours,

Richie Mason

Ed: A neat and timely idea, but 1,500 gallons is too little.

by e-mail

Dear Mr Hill,

Could I put out a request, through the pages of *Top Link*, for a photograph of 60124 *Kenilworth*? I am currently building an '0' gauge model of the loco, as I remember seeing it at York early in 1966 – it was very clean and a lovely sight. I have been unable to find a good portrait from this period. I would be happy to pay any costs incurred.

Best wishes for *Tornado*.

Tommy Day

Ed: Gordon Best, the quiet chap behind the trust's admin., says: "There was an article on scratch-building an 0-gauge A1 in the Model Railway Constructor Annual (1985). It mentions buying the 'Loco Drawing' from OPC. I've always been told no A1 General Arrangement existed. Does anyone know of a list of microfilmed drawings sold by OPC?"

Boat of Garten, Inverness-shire
Dear Gerard,

No, not a correction: some praise!
I was delighted to read of the decision
to oil-fire *Tornado*. Using coal, spark
arresters can do much but the lineside
is not kept clear; cinders lead to fires.

Forty years ago, on the Festiniog, I
saw fires going up the hill faster than
firefighters could run. Neighbours and
insurers more or less gave us an
ultimatum to stop running. They backed
off only when I promised to try oil-
firing.

It was difficult to get the burner
low enough. At first, on my regular
engine *Linda*, we could not get
anywhere!! Bit by bit we modified the
floor pan, burner and brick arch, until
we got the engine not only to steam but
to haul loads we would never have
dreamed of, on coal.

From struggling with variable coal
and variable firemen, we were running
heavier trains, faster and more reliably
with no lineside fires and more cheaply.

Don't expect it to work perfectly
on *Tornado* first time; undoubtedly a
lot of work will be needed to get full
performance – but persevere. Yours
sincerely,

Allan G. W. Garraway

by e-mail

Gerard,

Everything that Andrew Dow said
at the Convention about the benefits of
oil-firing was true (though engines have
survived 150 years of coal 'damaging'

them); but, since the Severn Valley and
Bluebell are not racing to convert their
fleets, he must have omitted something
from the left-hand column, and that is
'excitement'.

My opinion is that the engine was
marketed as 'an A1 for the price of a
pint' – not 'an oil-fired loco with A1
outline' – and it should not only be
capable of coal-firing but also spend
some of its early life in that form.

If thereafter oil burners are fitted,
prove phenomenally successful and are
never removed, fair enough. There
should be some sort of vote before the
capability to burn coal is removed
entirely, as suggested at the Convention.
Best wishes,

Beresford Dickens

*Ed: A1 60163 is being built to Arthur
Peppercorn's design, using updated
LNER/BR drawings; it will remain able
to change over to coal-firing if need be.
Andrew Dow emphasised that the board
will not allow this capability to be
compromised.*

*We all understand the attraction of
coal-fired main-line steam, but it is less
evident to those who run the railways –
and those who replace cinder-cut tubes.
The Severn Valley and Bluebell are
delightful but they cannot offer the
excitement of brand-new 90mph steam!*

*The costs of coal and oil were
quite different in 1948. Accelerated
funding depends on steady revenue that
only oil-firing can sustain.*

In 1979 the North Yorkshire Moors
Railway had no real plan for a rake of
suitable coaches. To remedy this, the
LNER Coach Association was started
with £5. In 1983 Gresley Buffet Car 641
arrived in very poor condition. Working
in the open, volunteers made a concerted
effort and learnt their trade on this
coach; it entered traffic in 1994.

The group built a carriage
workshop at Pickering and found a
reliable, affordable source of teak
panels. Some members bought their own
coaches. In 2000 they were awarded
£120,000 by the Heritage Lottery Fund
to restore Third Open Brake 43567 and
Tourist Open Third 23956.

They have a vast quantity of
spares, the secret of any restoration



group, many salvaged from Scottish
farms. The group's know-how of
restoring LNER coaches is freely
shared. LNERCA gained charitable
status in 2003.

They can now run all-LNER train. Aims
are an eight-coach set and a rake of
Thompson stock. Their website is at
www.well-hill.demon.co.uk/lnerca/

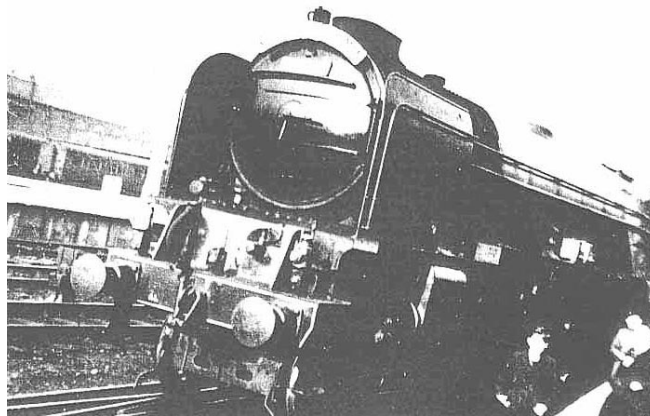
Above:
Gresley
teak set at
Goathland
Right:
Lavatory
Composite
88339,
Tourist
Open 3rd
56856 and
3rd Open
Brake
43567 at
Levisham
(photos: F
J. Curtis).



Corrections and clarifications

The Guardian became famous for its typos: it reviewed the opera *Boris Godunov* as *Doris Gudenov*. Making a virtue out of it, the paper has a feature under the above subhead, setting the record straight – and the editor of *Top Link* would like to do the same. With the help of readers, we revisit some previous issues.

This is Doncaster on 16 February 1949 and Peppercorn A2 60539 *Bronzino* with the pullman at (what was then) Platform 4, from which 60525 had just left. The small figure is Derrick Thompson, who sent in photos of both locomotives. Bruce Robinson saw the two locos had become confused. (photo: Derrick Thompson)



Bruce Robinson writes: In *Top Link* 8, p. 24, I wonder if the locomotive is in fact A2 60525 *A.H. Peppercorn*. I think it more likely to be 60539 *Bronzino*, as 60525 only ever had a single chimney. The picture, dated 16 February 1949, seems to show a double chimney.

Bronzino was the only A2 given a double chimney from new. Five more got them from mid-1949. Also, because of the late change to double chimney, *Bronzino* (the last A2) was outshopped after the first A1.

As a result, the first Peppercorn A1 got the A2 bogie meant for *Bronzino*, whose A1-pattern bogie can be

recognised by the two apertures in the front [stretcher] plate, as in the picture.

Finally, cast smokebox numberplates were fitted only from A2 60534 on. *A.H. Peppercorn*, built as LNER 525, gained one at her first major overhaul, after the date of the picture.

Ed: Thanks to Bruce for clarifying these details. In return, I was glad to be able to help him by locating copies of 1949 and 1951 issues of the British Locomotive Society's journal Railway Locomotives, which Bruce needed in researching the history of A2 60532 Blue Peter.

Compounds and Cartazzi

Andrew Hemming points out that GN no. 279's four cylinders all drove the 2nd axle (*Top Link* 7, p. 20). I knew that really (honest!) and meant to contrast unified drive on the 2nd axle – and the divided drive on GW/GC 4-cylinder types – with unified drive on the 1st axle, as on LNW 4-cyl. Claughtons and NE 3-cyl. locos. I blame too many late nights.

Andrew queried Sir Nigel's attitude to compounding. He steered well clear of it, apart from no. 10000 (whose 450psi boiler justified it): "Gresley's attitude towards the compound use of steam was almost wholly negative" (G. Hughes, *The Gresley Influence*, p. 116).

This surely stemmed from his training at Crewe. He rebuilt Ivatt compound no. 1300 as a simple in 1917, and then built hundreds of his own 3-cylinder simples.

The Mount report on Indian pacific accidents (*Top Link* 6, p. 21) blamed not just poor track but also insufficient side-control on the bogie. E. S. Cox, a member of Lt-Col. Mount's committee, wrote that "the locomotives ... were too sensitive to even quite acceptable track deteriorations" (*Locomotive Panorama*, 2.56). The report mentioned as a minor factor that "the Cartazzi, although suitable for the excellent track conditions of the LNER, was generally accepted as unsuitable for Indian conditions".



Above: Peppercorn A1 60147 *North Eastern* leaving Darlington Bank Top station on an up (southbound) train in 1949. This may be its entry into service on 13 April, since the paintwork looks new. (photo: Jeff Jackson/Darlington Railway Museum)

FLOW OF FUNDS

I found the financial statements for the year to 31 March 2003 confusing. I emphasise this is a matter of presentation; I do not question that the finances have been recorded correctly. With Barry Wilson's help I have been able to put together a statement that tells me what I want to know. I thought others might find this useful.

The Statement of Financial Activities does not show directly expenditure on the locomotive. If you understand how accounts are now presented, that spending appears at the end of the statement on p. 7 in the nett movement of funds at year end, in the difference in tangible assets in the Balance Sheet and in note 7. That seemed an odd way to show things, when spending on *Tornado* is what matters. I needed a Flow of Funds Statement, like this (in £, negative sums in brackets):

Bank balance at beginning of year		47,682
Decrease in debtors over one year	17,892	
Increase in debtors otherwise	(27,497)	
Increase in creditors	17,134	7,529
Depreciation in accounts		1,970
Disposal of assets		2,812
Incoming resources (covenants, legacies, donations etc. as p. 7)		145,079
Cost of generating funds (note 4)	(5,144)	
Covenantors' days, journal, Works expenses (note 5)	(16,047)	
Management and administration (note 6)	(12,683)	(33,874)
Expenditure on A1 locomotive and tender*		(120,214)
Expenditure on fittings, tools and equipment		(7,832)
Bank balance at end of year		43,152

*In broad terms, this spending was:

Certification costs, VAB visits and reports on boiler manufacturers, study for design of boiler and oil-firing	15,500
Machining forgings and castings (mainly purchased in previous year)	17,500
Manufacture of parts	9,750
Contract labour costs: work on horns, final cannonbox assembly, cab, bogie, fitting Cartazzi and other parts as available, including materials	75,000

My thanks to Barry Wilson, the Finance Trustee, for his considerable help.

John Knowles

DEDICATED COVENANTS

If you don't see what you want in the list below, just ask. There are other components to sponsor at prices to suit most pockets. You can get together with other covenantors to share the cost (shown as cash /monthly payment).

For more information, you can e-mail john.larke@alsteam.co.uk or ring 01325 4 60163, giving your name and contact details (phone/e-mail/address). John Larke is now responsible for Dedicated Covenants.

PS51M	Left cylinder cover (machining)	£600/£10 pm
PS86M	Right union link (machining)	£600/£10 pm
PS99	Centre radius link die block (forge/machine)	£300/£5 pm
PS111M	Reversing cross-shaft arm (machining)	£450/£7.50 pm
PS114M	Left lifting arm & bell crank (machining)	£850/£15 pm
PS117F	Centre rev. gear: balance gear, spring & rod	£150
PS120M	Centre piston and rod (machining)	£1,500/£25 pm
PS129	Centre piston-valve spindle	£400/£5 pm
PS515	Full set of cylinder cover studs	£300/£5 pm
PS516-1	Right slidebar bolts & nuts	£350/£5 pm
PS516-2	Left slidebar bolts & nuts	£350/£5 pm
PS516-3	Centre slidebar bolts & nuts	£350/£5 pm

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Evergreen A1

Back cover: Peppercorn A1 60151 Midlothian, built at Darlington in 1949, is ready to leave Stockton station. (photo: Middlesbrough Model Railway Club, courtesy Gordon Best)