



Winner of The Herbert Crow Award 2019



HERITAGE
FUND



Patrons - Lord Faulkner of Worcester - Judy, Lady McAlpine - Andrew Scott CBE - Sir Peter Hendy CBE - Brian Greenwood

"KEEPING STEAM HERITAGE GOING"

Chairman's Chat



The last NHLF course (Mechanical Overhaul) has been completed with a successful outcome for the participating trainees. Some have found employment within the heritage railway sector, others, including a signaling company, a manufacturer and repairer of narrow gauge steam locomotives and one has been accepted in the armed forces with the Royal Engineers.

We are very grateful to the National Heritage Lottery Fund who funded the course. We are also grateful to; the Prince's Trust both the Leeds and Leicester offices who helped to recruit some of the trainees, the host heritage railways, Alec Sharphouse, Klondyke Mill, Heritage Skills Academy and others. I personally would like to thank Martin Wadeson our Training Manager, Peter Winebloom our Training Support Manager and all the Assessors who checked the work of the trainees.

Due to the present Covid-19 restrictions BESTT has been developing online courses in basic workshop engineering practice, including Health & Safety, working at heights, lifting, the use of hand tools and machine tools for both novices, volunteers and paid staff.

Online courses in development are basic boiler repairs which include staying of fireboxes, tubing and patch screws followed by a two day practical course. We will also be recommencing the 4 day Riveting Course and the Boiler Washout & Examination course. A new practical course in White Metalling has been developed and all these courses will start in the autumn.

In January this year I was saddened to learn of the death of our first patron Dame Margaret Weston. She was a forthright person and she certainly beat the drum in support of BESTT. (Please see obituary elsewhere in this Newsletter).

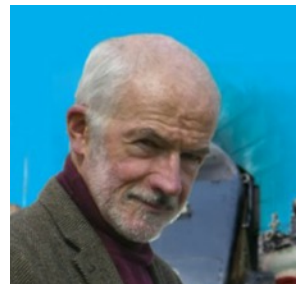
I am pleased to announce the appointment of two Patrons, namely Andrew Scott CBE, the former Director of the National Railway Museum and Sir Peter Hendy CBE who is Chairman of Network Rail.

Finally, I would like to thank all Board Members for their support in these difficult times, but especially Henry Cleary, our Project Director, for his diligent work in keeping the courses together under difficult circumstances.

Gordon Newton - Chairman

No Training No Future

"No training, no future" BESTT (The Boiler and Engineering Skills Training Trust)



The stark challenge for our sector is to pass on heritage engineering skills necessary to the safe repair and maintenance of steam engines, boilers and other heritage engineering for the benefit of future generations and an economic necessity for the mobile heritage economy. BESTT is a charity entirely dedicated to these aims.

From its origins in a proposed relocation as a new training base of Israel Newton and Sons, the 200 year old Bradford boiler-making business, BESTT has benefited from a partnership of support involving HRA, NTET (National Traction Engine Trust) for road steam and MHT (Maritime Heritage Trust) for marine —as well as many heritage railways and individuals.

BESTT training is uniquely based on a heritage syllabus, created by Richard Gibbon and Tony Simons (of NRM fame) in which trainees develop a portfolio demonstrating their achievement and these are individually assessed. Thanks to National Lottery Heritage Fund support of £1m since 2013 (now completed) a total of 28 trainees have completed one year paid placements at heritage railways and other partners with 17 entering paid roles in the sector and others on the national network.

BESTT also offers short courses on boiler washout and inspection, riveting and white metalling and is now developing online options for some topics. We also offer one off and bespoke training including support on engineering competency assessment and review. See more on what we do at <http://www.bestt.org.uk> Please contact us at: enquiries@bestt.org.uk

Henry Cleary - BESTT Project Director

A Tribute to BESTT patron

DAME MARGARET WESTON DBE

7th March 1926 - 9th January 2021



Dame Margaret was BESTT's first patron and it was of great sadness that BESTT learnt of her death in January 2021 at the age of 94.

She was the first director of the Science Museum Group (1973-1986) and in 1975 created the National Railway Museum.

The Association of Railway Preservation Societies (ARPS) later to become the Heritage Railway Association (HRA) invited her to become its President.

During WW2 she worked as a turner for English Electric and later took an engineering degree. Her first job after WW2 was an engineer working for a Clydesdale Shipyard.

As one of three women working with a largely male workforce, she was determined to show that she was as good as any man, if not better!

It was largely due to her that the HRA soon became recognised by Government and the regulatory authorities as a representative of the heritage railway sector.

When adapting the BESTT constitution to be compliant with Charity Law in 2012/13 one of our trustees, David Morgan MBE, consulted her and the fact we were successful was largely due to taking and following her advice.

She was a formidable lady: we were lucky to have her support.

*Gordon Newton
Chairman*



Dame Margaret Weston with Sir William McAlpine BT at Fawley 2009 (John Crane)

Lifetime Achievement



Congratulations to Andrew Semple, trustee / director and past vice chairman of BESTT for his Lifetime Achievement Award from the National Transport Trust for 50-years service to the Steam World.

Andrew is President of the National Traction Engine Trust (NTET) and is particularly interested in road transport within BESTT

Pilot project - Assessment of Competence.

BESTT Pilot project - Assessment of Competence.

BESTT was approached by the Kent and East Sussex Railway (KESR) Carriage and Wagon Manager, Paul Wilson to assist in the development and implementation of a system to manage the departments staff competencies. It has been a requirement for heritage organizations to demonstrate that they have appropriate arrangements in place.

Railways are subject to the requirements of the Health and safety at Work Act and supporting Regulations such as the Management of Health and Safety and Rail and other Guided Transport Regulations. These have specific requirements to assess potential hazards and address specific controls for work that is deemed to pose a risk to transportation. One aspect is to have in place a 'Safety Management System' which requires a supporting competency system.

Traditionally organizations have deemed staff capable of certain duties and authorized them based on previous skill and experience or simply that they presently perform the function adequately. Now the requirement is to establish these arrangements formally supported with records, training requirements, identified previous experience and importantly 'on going' assessments to demonstrate and improve competence.



Paul Wilson

Peter Blythe

Having assisted the KESR there are further opportunities and BESTT has the personnel capable of providing this service.

Two phases of assistance has been completed and BESTT presented the Carriage and Wagon Dept with a suite of documents. These cover Competency Policy, Schedules of Competencies (supported by training, experience, recording and assessment requirements). The pilot project also delivered specific Assessment Forms and a range of these have been produced for railway vehicle maintenance and general health and safety functions.

The Competency Management System is not just about paperwork. BESTT also provides coaching to Workshop staff to develop their awareness and understanding to carry out assessments and persuade volunteers to become involved in the improvement process.

As a result of becoming involved and completing the Pilot scheme BESTT has had enquiries from heritage centres.

To know more – contact.enquiries@bestt.org.uk

Article by Lawrence Donaldson

New Trustees

We welcome two new trustees, Matthew Ellis and Keith Ashford.



Matthew Ellis was trained in mechanical engineering at the National Railway Museum and York College. After a short period as Rail Operations Coordinator at the NRM, he moved to Beamish Museum to be Keeper of Transport, where he leads the engineering and transport operations teams restoring and overhauling a wide range of transport.

In his spare time he is a driver and fireman on the Ffestiniog and Welsh Highland Railways.



Keith Ashford is a Chartered Engineer and is chief mechanical engineer of North Norfolk Railway.

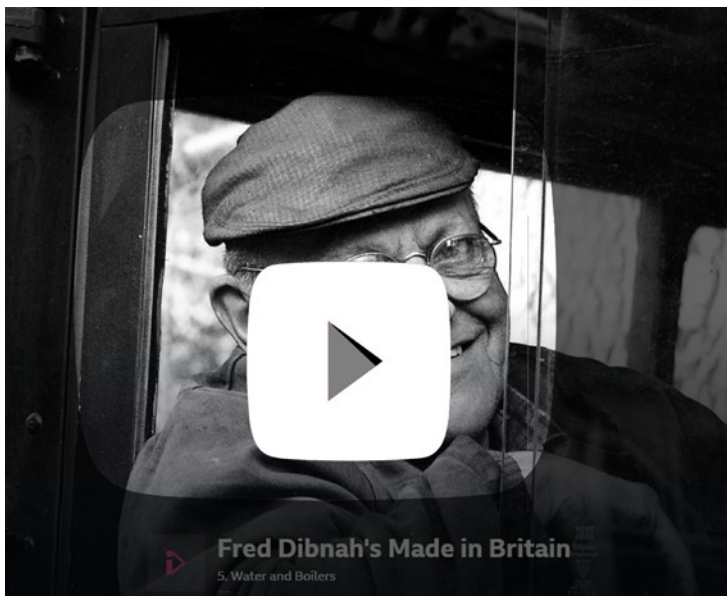


We would also like to welcome the appointment of Lesley Buckley as BESTT Secretary (not a Trustee), who will take over the day to day administrative work.

Our Chairman on TV

BESTT Chairman Gordon Newton featured in a BBC TV documentary series with Fred Dibnah. Series 5 filmed in 2004 - Water & Boilers featured Gordon at his former business Isreal Newton & Sons Ltd of Idle, Bradford. Boiler Makers.

Gordon discussed the origins of BESTT with Fred and [can be viewed here](#). The footage of Gordon is Timed stamped from 20:13.



David Morgan -Tales from the Hat

BESTT Trustee and director - *achievements include; Chairman of the North Norfolk Railway 1973-2010, Heritage Railway Association - retired in 2014 also having chaired West Somerset Railway and Great Central Railway at various dates.*



Founded FEDECRAIL in 1994 and WATTRAIN (World Alliance of Tourist Trams & Trains) in 2009 now President Emeritus.

I started my active involvement in railway preservation (as it was then called) in 1968, when I joined the Board of Central Norfolk Enterprises Ltd, later to become the North Norfolk Railway plc. At that time, the promoters of the project were uncertain as to which part of the former Midland & Great Northern Joint Railway (the M&GN) they would take over. By the summer of 1973, we had occupied Sheringham Station with a view to reopening the line to Weybourne Station and I had become Chairman.

In those days, there was no maintenance depot or repair workshops; what little machinery we had was installed in the former station bookshop on platform one and such rolling stock as we had was stabled on the single track which served it. Fortunately for us, we were supported by former railwaymen who had worked for British Railways in the age of steam, aided and abetted by a team of enthusiastic and talented volunteers. They were, almost without exception, lovely people and as such, attracted the active participation of experienced steam engineers, such as Bill Harvey, who had been shedmaster at Crown Point in Norwich during the last decade of steam. Two of our leading lights were Albert and Peggy Ashford who worked tirelessly on our various projects under Bill's guidance. They were usually accompanied by their young son, Keith, who was, I think, only eight years old when I first met him. Keith is now the CME (Chief Mechanical Engineer) of the North Norfolk Railway where he commands a team of more than 15 engineers and mechanics. Keith recently joined the BESTT Board of Trustees; he is also a chip off the old block and we are lucky to have him on our team. Bill Harvey realised that there was little guidance "out there" for us "newcomers" as the older generation grew older, retired and died.

Following discussions with David Madden, the Ashfords, Allan Garraway of the Ffestiniog and members of HM Railway Inspectorate, we persuaded Bill to write "A Manual of Steam Locomotive Restoration & Preservation" published in 1980 as a 96 page book by David & Charles, which even a dunce such as myself could understand. Bill was not only a great engineer but also a wonderful man; I count myself very lucky to have known him.

David Morgan

Trustee

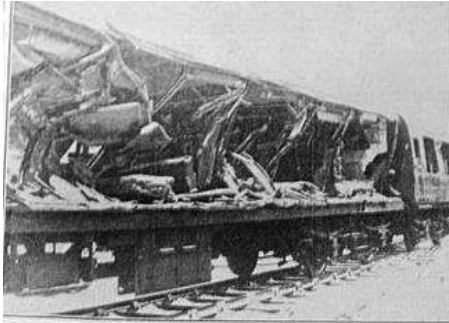
John Reddyhoff

Source: Ministry of Transport. Report on the Accident which occurred on 21st January 1960 near Settle in the London Midland Region of British Railways.

This information is Crown Copyright and is provided under the terms of the Open Government Licence.

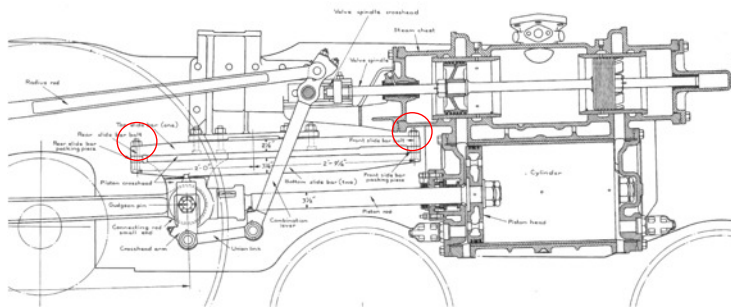
Derailment at Settle 21st January 1960

On 21st January 1960 at 01:45, the locomotive and first five wagons of a Down goods train from Leeds to Carlisle were derailed near Settle. The locomotive struck the side of an eight coach Up express from Glasgow St Enoch to St. Pancras. The derailed locomotive tore out the sides of the first three coaches and caused minor damage to the other five. Five passengers were killed and eight were injured.



The express was hauled by Britannia 4-6-2 70052 Firth of Tay and the cause of the accident was the loss of part of the right hand motion on this locomotive.

The motion assembly was driven six feet into the ballast and overturned so that it was pointing in the trailing direction. The crosshead struck the track on the adjacent Down Line resulting in damage that spread the gauge.



Britannia slide bar arrangement

Britannia-class locomotives have three slidebars supporting each crosshead and the right hand motion failed because both bottom slidebars were missing. Eventually, the piston rod broke allowing the piston rod, crosshead and connecting rod to drop on to the ballast where it dug in and was overturned so that it was facing towards the rear of the locomotive. Slidebar bolts and Slidebars were located up to 34 miles from the scene

Failed piston rod, crosshead and connecting rod facing towards rear of locomotive after the accident

The front slide bar bolts on Britannias were difficult to tighten because the cylinder cladding restricted access. The nuts were above the slidebars and the inner nut could only be tightened with a thin spanner.

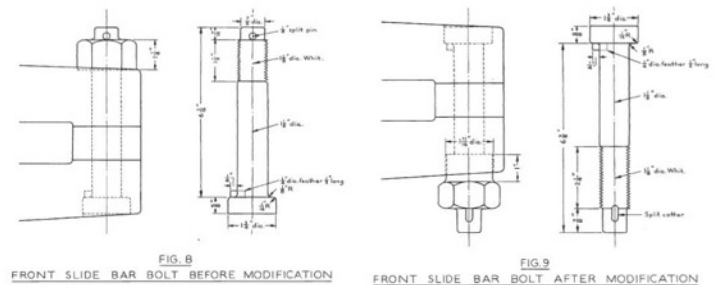


70052 had returned to traffic on 26th September 1959 following overhaul at Crewe. The right hand slidebar bolts had subsequently been reported loose on nine occasions and the left hand slidebar bolts once. There was no record that the bolts had been changed. The bolts and the holes in the slide bars were badly worn when recovered after the accident and the Inspecting Officer considered that this had been happening for a considerable time and not immediately before the accident. The steel feathers that should have stopped the bolt heads turning when the nuts were tightened were probably missing as the bolts had chisel marks where fitters had tried to hold the bolt head.

The Inspecting Officer criticises the maintenance staff for their failure to keep the bolts tight and to ensure that the split pins were bearing correctly on the top of the nuts.

The poor design, with limited access, is almost dismissed as a secondary issue. In fact, it is unlikely that maintenance staff at a depot would have been able to tighten the bolts sufficiently, particularly the inner bolt where a thin spanner was required. The report also considers that correctly fitted pins and cotters have an important role in preventing loosening once a bolt is tight.

All Britannia front slide bar bolts were modified to the new design that had been introduced shortly before the accident. See below.



Bolted joint good practice

- Joint faces must be clean and flat – no paint, oil or dirt.
- Minimum number of parts in joint – there is settlement in the joint at every interface.
- Nuts and bolts must be in good condition.
- Washers spread the load under the bolt head and nut but do not keep bolts tight.
- If the joint has multiple bolts, these must be tightened in sequence.
- Bolts must be fully tightened to achieve the required clamping load on the joint.
- Bolts must project through nuts by two threads.

- Locking devices (split pins, special nuts etc.) may help but do not replace correct tightening.
- Lubrication increases the load in the bolt for a given torque.
- Rust, dirt and damaged threads all reduce the load in the bolt for a given torque.
- **If a bolt comes loose regularly, there is something wrong with the joint and this must be investigated.**

Locomotive bolted joints

- There is rarely a specified torque value for bolt tightening on steam locomotives - skill and experience is needed to judge when the bolt is tight.
- Diesel engines and modern rolling stock normally have a specific torque loading –
 - always use this where it is specified.
 - always check that a used bolt is in an acceptable condition for re-use
 - the thread must be examined carefully for signs of stretch or damage.
 - the nut must be a good fit.
 - If the bolt was intended to be fitted in the hole, this fit must be checked.
- New bolts must be made of the correct grade of material and have a correctly specified thread form.

The design of the Britannia slide bar bolts did not comply with what we now consider to be good practice for bolted joints and safe operation depended on the diligence of the Examining Fitters carrying out the routine inspections. The pressure on them to keep the job going meant that they did not investigate why some bolts were repeatedly coming loose.

This accident is a reminder of the need to stay vigilant and to always ask “why”. There is always something new that is not covered in procedures. If the cause of the loose bolts had been investigated, the worn bolts and slidebar holes would have been found and repaired and the accident would not have happened.

IF IN DOUBT, ASK

*John Reddyhoff
June 2021*

Courses Old and NEW

Online training courses will commence in Autumn 2021 and consists of:

- Basic Workshop Skills & Practices,
- Boiler Stay Work,
- Fitting Patch Screws,
- Tube Removal and Installation.

Practical courses include:

- Riveting,
- Boiler Washout & Examination
- and a **NEW** course White Metallurgy of Bearings.

For more details on the Online and Practical courses please email - **enquiries@bestt.org.uk**

Updated BESTT Banner

A new generic banner has been created to replace one of the panels of the existing exhibition stands.

Bestt



Boiler & Engineering Skills Training Trust

Bestt - Giving heritage steam a working future

Would you like to support the heritage steam sector by being trained in basic workshop skills including • Health & Safety • working at heights • lifting • riveting • boiler washout and examination • mechanical fittings including • wheels • axles and bearings •

Some of the above courses can be online

To keep this....



this....



And this....



We need this....





Opportunities for full, part time or volunteers

- A programme of on the job training, working under the supervision of craft engineers at one of the UK's leading heritage workshops.
- All on site and online training is carried out by qualified engineers with professional assessment.

BESTT - is a registered charity and allocates its funds entirely to developing and supporting training.
Support us by becoming a member to help develop this critical area for steam heritage.

“KNOWLEDGE not passed on is knowledge WASTED” !

To find out more please visit

www.bestt.org.uk or email enquiries@bestt.org.uk



Publicity is always appreciated. If you would like to use this for any event. Please contact Gordon Newton at newtonboilers@aol.com

The Boiler and Engineering Skills Training Trust



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Boiler & Engineering Skills Training Trust



Membership and Donation Form

The Boiler and Engineering Skills Training Trust is a charity entirely devoted to the training of new heritage boilersmiths and mechanical engineering to maintain the working steam fleet of railway locomotives, steam vessels and road vehicles for future generations to enjoy.

We have raised substantial Heritage Lottery Funding for our training schemes but we can only continue if we have a base of donations from those who support us. To learn more about BESTT visit:

www.bestt.org.uk

☐ **Corporate Membership** - Heritage railways, Museums, Preservation Groups, Clubs & Societies and professional organisations

£75 per year

☐ **Associated Membership** - Limited individual. One

£12 per year

☐ **Donations** - Donations are a great help and can be made on a single or yearly basis. You will receive an acknowledgement and details.

£

☐ **Gift Aid** - Please fill in the form on the back of this page



NAME

ORGANISATION
CORPORATE MEMBERS

ADDRESS

TEL. NO.

DATE

EMAIL ADDRESS

GDPR - Please add me to the mailing list ☐

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(To view our Privacy Policy - Please visit our website - www.bestt.org.uk)

To join BESTT and support our work please send a cheque with your subscription details to:

Lesley Buckley C/o BESTT, 151, Gowthorpe, Selby, North Yorkshire, YO8 4HS

You can also email: enquiries@bestt.org.uk.

Cheque's made payable to - **"Boiler & Engineering Skills Training Trust"**

Data security - Your data will not be used without permission

June 2021

Charity Gift Aid Declaration – single donation

Boost your donation by 25p of Gift Aid for every £1 you donate

Gift Aid is reclaimed by the charity from the tax you pay for the current tax year. Your address is needed to identify you as a current UK taxpayer.

In order to Gift Aid your donation you must tick the box below:



I want to Gift Aid my donation of £_____ to:

Name of Charity Boiler & Engineering Skills Training Trust

I am a UK taxpayer and understand that if I pay less Income Tax and/or Capital Gains Tax in the current tax year than the amount of Gift Aid claimed on all my donations it is my responsibility to pay any difference.

My Details

Title _____ First name or initial(s) _____

Surname _____

Full Home address _____

Postcode _____ Date _____

Please notify the charity if you:

- want to cancel this declaration
- change your name or home address
- no longer pay sufficient tax on your income and/or capital gains

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If you pay Income Tax at the higher or additional rate and want to receive the additional tax relief due to you, you must include all your Gift Aid donations on your Self-Assessment tax return or ask HM Revenue and Customs to adjust your tax code.

- Membership gives the opportunity to be involved with BESTT.
- Keep up to date with newsletters and web site.
- Receive first hand information regarding opportunities for both trainees and mature students.
- Receive information regarding technical training modules.
- Have the opportunity to get behind the scenes and look at what we do.
- Offer your own skills and expertise.
- Know that your subscription / donation is keeping BESTT alive and enable the scheme to continue into the future.
- Notice and invitation to the AGM.

Thank you for your support - keeping steam alive...

Supporting Organisations



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Boiler & Engineering Skills Training Trust



Registered Office:
St. Lawrence Church Hall
St. Lawrence Parish Church
Lawrence Street
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YO10 3WP

Registered Company Number 05677191
Registered Charity Number 1153592



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