AUTOCAR

1903 North Eastern Railway Electric Autocar Trust

Newsletter No.38 — Summer 2019

The first weeks of public service.

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The North Eastern Railway 1903 Electric Autocar Trust

Registered Charity No: 1105829
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www.electricautocar.co.uk

Chairman John Furness,
8 Hartwith Green, Summerbridge, Harrogate,
HG3 4HX.

Tel - 07496 443302

Secretary Dave Cullingworth,
29 Beckett Close, Nawton, York, YO62 7SB.
Tel: 01439 771 758
E-mail: david.cullingworth@btinternet.com

Treasurer Peter Lund,
41 Penfold Way, Dodleston, Chester, CH4 9NL.
Tel: 01244 661070
E-mail: pdlund47@gmail.com

Press, Publicity & Editor Simon Gott,
Tel: 01943 863 440
E-mail: autocar.newsletter@gmail.com

Membership Stuart Hiscock,
2 Lairs Crescent, Snainton, Scarborough, YO13 9BQ.

Project Engineer Steve Hoather M.A., C. Eng., F.I. Mech. E., F.I.E.T.

Front Cover: *The autocar approaching Bolton Abbey on 29th May 2019*.

(Alan Chandler)

July 2019

Welcome to the 38th issue of our newsletter. After the excitement of the HLF launch day and winning awards, we've now in the routine of public operation and finishing the restoration. We may have an operational autocar but there's still work to be done, both with the autocar and the trailer autocoach. As well as practical restoration work there are other roles available for anyone able to help.

This summer the Trust is in a transition period between the restoration 'era' and operating, with some of each activity to report on. We're looking to build on our success so far and invites to visit other railways are arriving for 2020. We'll keep you updated via the newsletters but in between issues, we use our web-site (www.electricautocar.co.uk), the threads on the LNER Encyclopedia and RMWeb, our Twitter account (@1903_Autocar) and our Facebook page.

The newsletter could evolve somewhat over the next year or so but as well as news we'll try and have features and historical pieces — my thanks to those who have sent work in already.

Contents

New members

A warm welcome to Mr. R Milner of Embsay, Mr. J Barry of Letchworth and Mr. F Stirk of York.

Chairman's notes

John Furness

It probably isn't well known but my other role in the autocar's world is as the YDR's assessor for passing drivers out on the Embsay Railway. We now have five (including myself) lucky people. The only ones alive who are licensed to drive it. Now that is exotic traction. But maybe not for much longer. The world tour for next season is starting to come together, with a visit to the Great Central Railway confirmed. And visits to railways near London, in the north west, and a big one in the north east on the cards. These will all be in the early part of the year so that the autocar can run the main season at Embsay. In the process, many new drivers should be created.

After a slow start with a few reliability issues passenger numbers on the Wednesday trains have taken off. With most trains full, it looks like the trailer will be required next year. Indeed the big railway in the north east has requested it. So we now have another deadline to work to. Exciting times ahead.

Vacancies:

Competent individuals to work on remaining restoration tasks & maintenance.

Fund-raiser, both to solicit donations & generate finance through sales.

A researcher, to seek out historical information about the autocars.

Volunteers to assist with the publicity stand at exhibitions.

Volunteers/stewards to assist with speaking to passengers and explaining the autocar's significance in transport history.

Any members of professions, for technical advice when needed.

Above: *The autocar at Bolton Abbey on the White Rose charter.* (Rob Milner)

Below: *18th April 2019, the second day of public running*. (Alan Chandler)

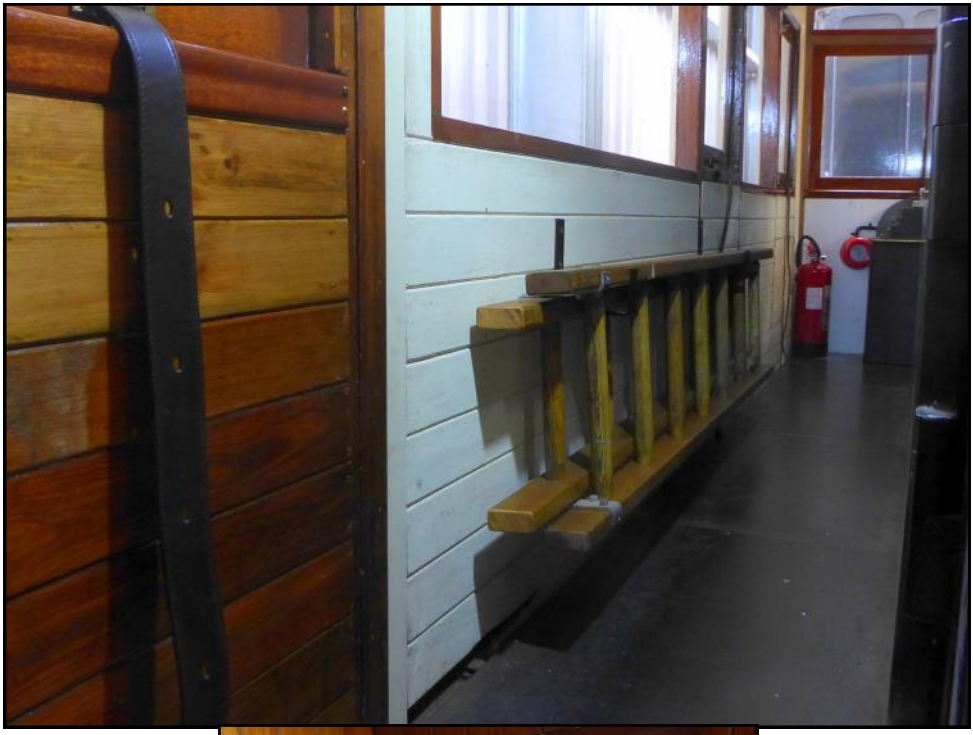
Progress Report

Steve Hoather, pictures Alan Chandler

During the winter months our small band of volunteers progressed with a number of outstanding items on the Power Car. After finishing the internal sliding doors described in the last issue, Alan concentrated on the external doors. As well as fitting the brass treadplates, and checking that all doors, locks and budget locks were in place and working correctly, we decided after experience on HLF day that it would be wise to fit wooden infills to prevent people who are entering the coach catching their toes on the bottom of the body – I saw one or two people stumble as a result of this. Also, before we could regularly carry passengers, we had to provide and fit an emergency ladder along the side of the engine room (in case we need to evacuate passengers while away from a platform) and other emergency equipment such as a crowbar and flags. We intend to make a locker for the smaller items in no. 2 cab. (*In the bottom picture, it will be out of shot to the right of the driver*).

On the engineering front, Roger and I did a number of technical modifications as a result of initial experience, such as one to prevent air loss when the engine is shut down, and another so that the WSP (wheelslide prevention system) can be isolated if faulty and enable the train to remain in service – this has already proved its worth. There were also several jobs to finish that we didn't have time for last autumn, such as fitting the windscreen wiper at no. 1 end and the handbrake warning buzzer at no. 2 end. Some of the time the weather was so cold that it was difficult to do wiring work, as our fingers kept dropping nuts and washers, so the most important job got left to the last minute, which was to complete and commission the fire detection and extinguisher system in the engine housing.

Alan also finished the internal Wi-Fi system which enables passengers to receive a description of the project on their smartphone or tablet – this is part of our educational commitment to the HLF. By selecting the 'NER_AUTOCAR' network and entering 'nerautocar.com' in the browser window, passengers can access a brief history of the autocar and view a selection of short videos recorded at key stages of the project. There is also a slideshow of the whole restoration and additional material can be added as it becomes available. The system is controlled by a powerful mini PC, mounted in the engine compartment, and hidden directional antennae concentrate the Wi-Fi signal down the



Power Car saloon and in the opposite direction to cover the Trailer Car, when that is running with the Power Car. The photo opposite top shows the inverter/ wifi box with its lid removed.

Before the Power Car entered service, a number of instructions had to be written and agreed with the Railway – Driver's Preparation, Disposal and the procedure for rescuing the train if it breaks down are examples. These all took several iterations to get them right, but now that we have them they will be included in our Safety Case and be available for use by other railways when the autocar goes visiting.

One of the most important paperwork tasks was to complete the Safety Assessment, which is a legal requirement under ROGTS [The Railways and Other Guided Transport Systems (Safety) Regulations 2006]. I had begun this way back in 2011 when the project started, and it basically consists of writing a description of how the various risks in building and running the train will be controlled, and having it signed off by an ICP (Independent Competent Person). We were fortunate in having a member of the Trust (John Payne) who had been on an ICP course run jointly by the Office of Rail Regulation and Heritage Railway Association, and during the build we had gradually been writing and signing off sections as the relevant work was completed (the full document already fills two ring binders in its printed form, and is not yet complete). Inevitably, the final stages of this got delayed with so much else to do, but I was able to produce sufficient to enable John to sign off an Interim Certificate for the vehicle to legally run just 36 hours before the first train was due to leave!

The first passenger carrying run was booked for Wednesday 17 April, and on this and the next day seats were all pre-booked with a slight premium on the fare. Since the vehicle had not turned a wheel since HLF day six months earlier, we arranged two days of test runs beforehand, both to give the drivers some practice and to check all was OK with the train. One of the test days had to be very short as the Railway were running a wedding special. On one run the engine shut down unexpectedly, but we were able to coast into Bolton Abbey station and had deduced that the fault was in the electrical control system and not the fuel system as we first thought, only for the fault to disappear by itself – these intermittent electrical faults are always the most difficult to find, and often come back to hit you later on, as did this one!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TEMPERATURE
MONITOR
MOD.
RECORD.
1 2 3 4 5
LE 30 79
C2
R1a
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R6
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16
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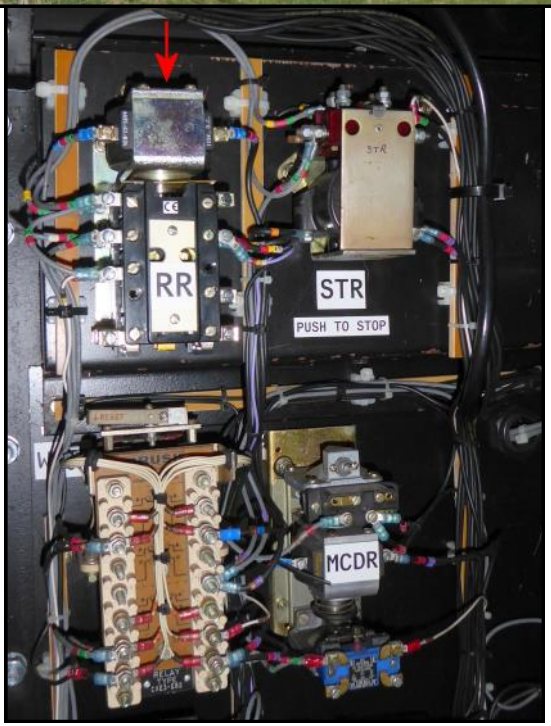
J K

The inaugural running day soon came round, and when I arrived at Embsay I was greeted by the news that the engine would not start! Since a new driver was learning under instruction, our first instinct was that the preparation procedure had not been followed correctly, but it soon became obvious that this was not the case and we had an electrical fault. With the clock ticking, and 44 passengers waiting at Bolton Abbey, who had pre-booked for this inaugural run, we were unable to find the fault, so took the decision to start up the class 37 diesel loco and use it to haul the Autocar down to Bolton Abbey, so at least our disappointed customers could see the Autocar. On the way down, I realised that we actually had two drivers on board, so after a quick conference at Bolton Abbey we decided to run with the loco coupled to the Autocar pushing or pulling. Because the class 37 is air braked, the driver could operate the brake on both vehicles from either the loco or the Autocar, and an air supply was available on the Autocar to operate the whistle and (if needed), the windscreen wiper. This, of course, was effectively the Rescue Procedure which we had practised during the static brake test, not realising we would need it so soon! The photo opposite top shows the train approaching Holywell being propelled by 37294.

The first round trip left about 45 minutes late, after the promised short talk by Stephen Middleton, and all passengers were given a bottle of Electric Autocar Celebratory 'Pioneer Ale' as advertised. Because of the failure, they were told to keep their tickets and either claim a refund or come back on another day and have a free trip. Although a disappointment, most people seemed to accept the situation and I have since met several who came back for a ride when the Autocar was running normally.

During the course of the day, both Alan and I were able to study the electrical schematic drawings in more detail (Alan whilst he was in the Dentist's waiting room!) so by the time the Autocar was back in its shed in the evening we had a better idea of possible causes of the fault, and, sure enough, we found that a relay coil had burnt out. After a telephone discussion with Dave Moore at Loughborough we agreed it would be safe to wedge in the defective relay, provided someone (usually me) was adjacent to the engine when it was running to shut it down in emergency, and this enabled us to run on subsequent days as booked until we could obtain and fit a replacement coil. The replacement coil is of a higher rating than the original, and is arrowed opposite bottom.


RR
STR
PUSH TO STOP
MCDR

At the time of writing (mid-June) we have successfully run on the subsequent ten Wednesdays as booked, plus an evening Charter, the "White Rose", complete with headboard in traditional fashion. We have had a number of problems as is to be expected with a new design of train – it took a long time for the air to vent out of the cooling system, but that seems to have settled down now, and the reverser is stiff to operate in one direction when it is cold, but the drivers now know how to overcome that. However, on the evening of the Railway's AGM in early June, the Autocar was booked for a special return trip to take members from Embsay to the AGM at Bolton Abbey. The driver started up the engine in the shed, drove it into the station and shut the engine down as normal. When it came to departure time he pressed the start button ….. and nothing happened, so the trip had to be abandoned. I went over the next day and found that a reed relay in one of the electronic modules had stuck in (arrowed in the bottom photo on page nine). The fault cleared itself with the slight jolt when the rack was pulled out, but a similar fault had apparently occurred in the early days of testing at Loughborough, so Dave Moore is now investigating the circuit and looking for a better relay. In the meantime, the drivers know what to do if it happens again.

Because of the focus on the Power Car, little has been done on the Trailer Car. Dave Moore came up for a day at the end of May, and we fitted the air brake cylinders, which had been delivered last Autumn, but a further day with him is needed to fit the levers which connect the cylinders to the existing linkage for the vacuum brake. The vehicle will then need lifting on the jacks to enable us to fit the air pipework and electrical cables. There is no date for the jacks becoming available, and it is therefore now very unlikely that we will be able to finish the trailer before the winter. The photos opposite show one of the cylinders in place on its mounting platform, and yours truly tightening the bolts which secure the supporting brackets on the inside of the solebar.

Warley Model Railway Exhibition

The Trust is due to attend this exhibition on the 23rd & 24th November this autumn. The publicity stand has been out to several clubs' model railway shows before but this one is very special, as the autocar's coming with us! Warley is widely regarded as the 'flagship' model railway exhibition in the UK, held at the NEC and attracting an international audience.

Each year Warley has a full-size exhibit as the centre-piece of their show and this year it's No. 3170. It's an opportunity to show the autocar to a national audience, some of whom can't get to Embsay.

For more information about Warley Show: https://www.thewarleyshow.co.uk/

A Book Launch

26th June saw a visit from a group of railway authors and photographers, including Gavin Morrison, Derek Huntriss, John Hunt, Les Nixon and John Whiteley. As well as a shed tour and a ride on the autocar, a new title, '*West Riding Steam'*, published in full colour by Never Again Publishing, was promoted.

The 'Morris Connection'

Edited from an original article by ***David Pusey*** for '*Recalling*', the magazine for Morris Commerical enthusiasts.

I have always been interested in trains. As an apprentice at Adderley Park, I used to commute from Oxford to Birmingham Snow Hill on a Sunday evening, and back to Oxford on a Friday after work, when not travelling by car with one or another colleague. Before I had a car of my own, I also used to travel from Adderley Park to Stechford during the week. I have since driven several steam and diesel locomotives and travelled as far as Sicily and southern Germany by train on various holidays. What have trains got to do with Morris Commercial?

I recall that at some time fairly recently, one of the ex-apprentices, Norman Painting, withdrew all his publications about Wolseley and Morris Commercial from the market. Interestingly, the magazine *'Old Glory'* covers a review of one of Norman's books, '*Wolseley: Special Products 1901 to 1926'* in its edition for March 2019.

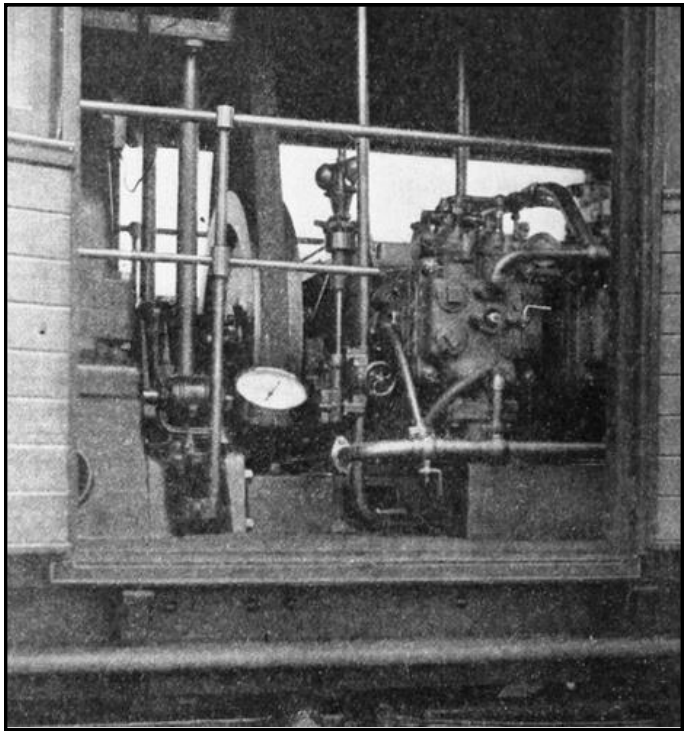
Co-incidentally, I note from the February and March 2019 editions of '*The Railway Magazine*', that a Heritage Lottery funded project to restore a 1903 North Eastern Railway petrol / electric railcar has won the *Rail Express* Modern Traction Award for the restoration of a pioneering railway vehicle to combine an internal combustion engine with a generator and traction motors. It also won the Manisty Award for its outstanding contribution to railway preservation. What have these two notions have in common, and perhaps more interestingly, what do they have to do with Morris Commercial?

Norman's book outlines the development and the specification of two railcars built by the North Eastern Railway. Adderley Park was then under the general management of Herbert Austin, the forerunner of Morris Commercial. Austin of course, famously left Wolseley's factory at Adderley Park in 1905 to open his own car manufacturing company at Longbridge. Thus, we may say that, for the ex-apprentices at least, this is a part of our DNA.

Norman's painstaking research shows that the railcar had an 80hp 4-cylinder, horizontally-opposed petrol engine. The bore was 8½ inches and the stroke 10 inches, with a capacity of 37 litres. Its fuel consumption was estimated at 10 gallons per hour. The power output of the engine was 81bhp at 420rpm and

93bhp at 480rpm, and the electric generator developed 60 kilowatts capacity for the 50hp traction motors on each bogie. A separate 5kw dynamo driven by the engine charged the 40 cell 90 amperes capacity batteries that provided lighting. The engine had a governed speed of between 420 and 480rpm. Engine cooling was by a Clarkson radiator mounted in the roof of the engine compartment, together with a fan driven by a dynamo that also provided power for internal lighting. The vehicle was also fitted with electro-magnetic brakes that acted directly on the rails.

The benefit of a petrol-electric system, rather than a petrol-mechanical alternative, did away with a need for mechanical gearing between the engine and the final drive. It also provided a high level of torque, with its attendant rapid acceleration from standing starts. Braking was by a Westinghouse automatic air braking system, coupled with a compressor driven by an independent electric motor. Hand brakes of the screw-on type were also fitted, with controls in each driving position.



Installation of the Wolseley engine (courtesy David Pusey)

Norman suggests that much of the specialised equipment such as the electrical components could have been sourced from other Vickers companies. He also suggests that some other equipment such as wheels, axles, and suspension, might have come from the adjacent factory of Brown, Marshalls & Co. Ltd. The company went on to produce larger railcars for American railroads such as the Hudson & Delaware Company, with 6-cylinder horizontally-opposed engines.

Whilst diesel railcars became more fully integrated into rail operations in the 1950s and 1960s, usually in multiple and using diesel rather than petrol fuel, it is of considerable interest that one of the constituents of the Nuffield Organisation, albeit in later life, and the previous incumbent of Adderley Park, should have been so far in advance of conventional rail developments. After all, it took a number of years, and several developments of steam-powered railcars before the advent of internal combustion engines were commonly used in conjunction with electric traction.

Whether or not Norman knows that this railcar has been restored, I don't know. I hope that he relishes the fact that someone has found the vehicle, in a hedge, in two parts, and has restored it to working order, and that it will be running this year, carrying passengers again, on the Embsay and Bolton Abbey Steam Railway. The NER 1903 Electric Autocar Trust must be commended for restoring and returning this unique vehicle to working condition. Let's hope that members will realise the connection should they visit this railway and see the vehicle. I will certainly try to visit when I am in the area.

Many details have been taken from Norman Painting's book mentioned above, which covers a wide and fascinating range of other special products made by the Wolseley Company, including other locomotives, snow tractors for Captain Scott's expeditions, aero and airship engines, marine engines, etc., all emanating from Adderley Park.

None of this history was ever brought to my notice whilst I was at the factory. Was this because everyone involved had retired and the knowledge had been lost? I have had to wait until I am in my late seventies before I found this out!

The autocar meets Mitchell/Illingworth and train at Stoneacre Loop (EBASR) 23rd June 2019. (Matt Fisher).

The autocar at Holywell Halt (EBASR) 24th April 2019. (Alan Chandler)

The autocar approaching Bolton Abbey; May in Wharfedale. (Alan Chandler)