

Orion, Darroch and the 'Alfreds'

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The Stephenson Locomotive Society

The Premier Railway Society - Founded 1909

www.stephensonloco.org.uk

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Orion, Darroch and the 'Alfreds'



An 'Alfred the Great' in its original form. LNWR No.1948 *Camperdown*

SLS Collection

Front Cover: *Orion* in full regalia on its launching day on the Downs Light Railway, 22 April 2005.

N.R. Knight

It may come as a surprise to some readers that there still exists a Crewe-built, four-cylinder Webb compound, built in the days of F.W. Webb and George Whale, yet still to be found in steam. Two attributes mark it off from the rest of the London & North Western Railway's 'Alfred the Great' class: its 'Precursor'-type boiler which was constructed in Kent and its being a one-sixth scale version of its long-departed sisters.

The engine in question is LNWR No. 1957 *Orion*, now in the possession of the Stephenson Locomotive Society, through whose efforts - generously assisted by the Heritage Lottery Fund - it is fully restored and steamworthy. The involvement of the HLF is appropriate since not only is *Orion* a living product of Crewe's world-class engineering works in their golden age, but also because its long life has brought it into contact with many important aspects of railway history: the Liverpool & Manchester Railway Centenary celebrations, the pioneer work of Wenman Bassett-Lowke and Henry Greenly, more recently 'Locomotion', the National Railway Museum, Shildon, as well as a host of railway historians. There can be a strong, human side to such stories. *Orion's* original designer, constructor and owner, Richard Darroch of Crewe, was a legend in his own right. The engine also embodies the skills of numerous, fitters, pattern-makers, machinists and whatever of 'old Crewe', people often blessed with expertise in crafts, some of which have largely faded, at least from the UK, as has most of railway-Crewe itself. In Darroch's day it was a centre whose 7,500

or so employees rolled the 'Premier Line's' rails, as well as constructing and maintaining its fleet of some 3,100 engines. Amongst the many who have taken an interest in *Orion* we find C.J. Bowen Cooke, H.P.M. Beames and Josiah Stamp, supremo of the LMS. No mean engine, this piece of living heritage.



A 'Benbow' LNWR No.1943 *Queen Alexandra* with extended 'Precursor'-type cab and outside Joy valve gear; middle-height capuchon.

SLS Collection

'Alfreds' and others

Orion's chronicle starts in Crewe over a century ago. The story of Webb's compounds has often been related.¹ The four-cylinder passenger engines, the 'Jubilee' and 'Alfred the Great' Classes, although not faultless, have generally been rated as reasonably successful, the logical outcome of that gifted engineer's long experiment with compounding.

Compounding has a mesmeric appeal to the intellectual wing of mechanical engineering. Economists and fitters, who live with the grimness of everyday reality, have had their doubts: compound engines tend to be costlier to construct, maintain and repair than their single-expansion fellows. Nevertheless, given that the costs of operating LNWR engines were rising by the year (about £2½ million in old, hard pounds c.1900) the fuel frugality of the compounds had its economic attractions.

Exactly why Webb chose and then abandoned his famous three-cylinder, divided drive form has given rise to speculation. Webb's adoption of a form of bogie (he referred to it sensibly as a 'double radial truck') supplied a straightforward and robust support for the four in-line cylinders.²

Back in the 1890s the outcome of Webb's cogitation was No. 1501 *Jubilee*, originally constructed as a four-cylinder simple, and its sibling *Black Prince*, a four-cylinder compound; both emerged from Crewe in the summer of 1897, the year of Queen Victoria's Diamond Jubilee. Eventually there were to be 40 of these austere elegant machines, the majority named after HM

ships: *Iron Duke*, *Invincible*, *Agincourt*, *Collingwood*, etc. They had the same boilers and driving wheel diameters as the three-cylinder 'Teutonics' of which they were, in one sense, a four-cylinder version. Other four-cylinder compounds followed, including an 0-8-0 heavy goods engine and the '1400' Class mixed traffic 4-6-0s: 280 machines in all.

Although Webb's three-cylinder 'Dreadnoughts' originally had individually adjustable valve gears for the high pressure cylinders and low pressure cylinder, for his new four-cylinder machines Webb employed four valves actuated by two sets of gear, the inside set working the valves of the outside high pressure cylinders by means of straight rocking arms. Although straightforward, this arrangement denied drivers the ability to fine-tune separately the valve events of high and low pressure cylinders, the ratio of which was 1:2.3 (see also reference ²).



Another original 'Alfred' with the prominent capuchon that gave distinction to many of them: LNWR No.1950 *Victorious* at Manchester London Road.

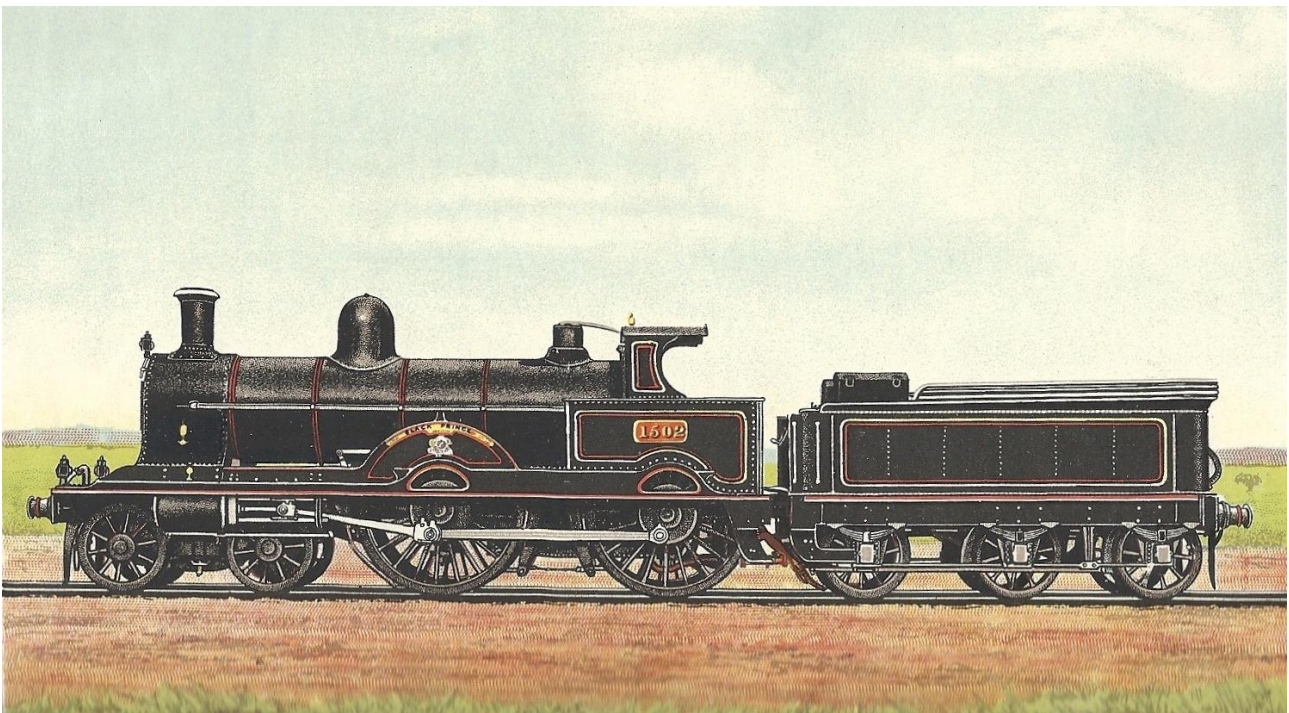
Ian Allan Library

This arrangement was also to be a feature of Webb's next four-cylinder compound class, the 'Alfred the Great' Class of 1901 and it is still to be found on *Orion*. Its simplicity was offset by its contribution to the palpable sluggishness of a class which, although it could handle heavy loads competently, failed to do so with much sparkle. Also, the locomotives could be difficult to get under way by dint of having to use the two high-pressure cylinders alone before their low pressure twins 'cut in' and valve-setting was necessarily far from ideal.³

Webb's solution was to give the 'improved Jubilees', the 'Alfreds', larger boilers. Although these were greater by 4in diameter, with heating surfaces raised to 1,508sq ft, the firebox (the heart of the water heating operation) remained unchanged and the hp:lp cylinder ratio narrowed to 1 :1.64. The 'Alfreds' (also named, in the main, after warships) ran to 40 locomotives, but the lacklustre performance remained. *Orion*, one of these, was outshopped from Crewe in March 1902.

F.W. Webb departed from Crewe in 1903. His successor, George Whale, is probably best remembered for his fast and furious two-cylinder simples ('Precursors', 'Experiments', etc.) but he nevertheless turned to Webb's later compounds, seeking ways to improve their performance. Credit where it is due, though; Webb had already been working on the subject and seems to have decided to adopt two independent pairs of valve gear for the high and low pressure cylinders on the 'Alfreds' in spring 1903, very shortly before the illness that led to his retirement.

Drivers could now adjust high and low pressure cylinder expansion separately; the preferred way was to set the low pressure in full gear and to fine tune the high pressure set according to local requirements: the load behind, the gradients ahead, etc. These metamorphosed 'Alfreds' (known as 'Benbows') were good engines and have some impressive records chalked up. One took a 480-ton train from Rugby to Harrow (71.2 miles) in 80 minutes, probably generating 1,000hp in order to do so. *Orion* was thus transformed in June 1904. There are few records of its actual service, but it is believed that it took its turn on West Coast expresses. Broadly speaking, the 'Alfreds' were front-line express locomotives in their youth, on the Euston-Carlisle and Birmingham roads and notably on Leeds-Manchester-North Wales services where they continued to serve in 'Benbow' form; they gravitated to secondary passenger work once Whale's stronger 4-4-0s came on stream.



Orion's cousin: one of the 'Jubilee' class 4-4-0s from which the 'Alfreds' were derived; LNWR No.1502, *Black Prince*, constructed at Crewe, 1897.

From a lithograph produced by Alf Cooke, 'Queen's Printer, Leeds', 1899.



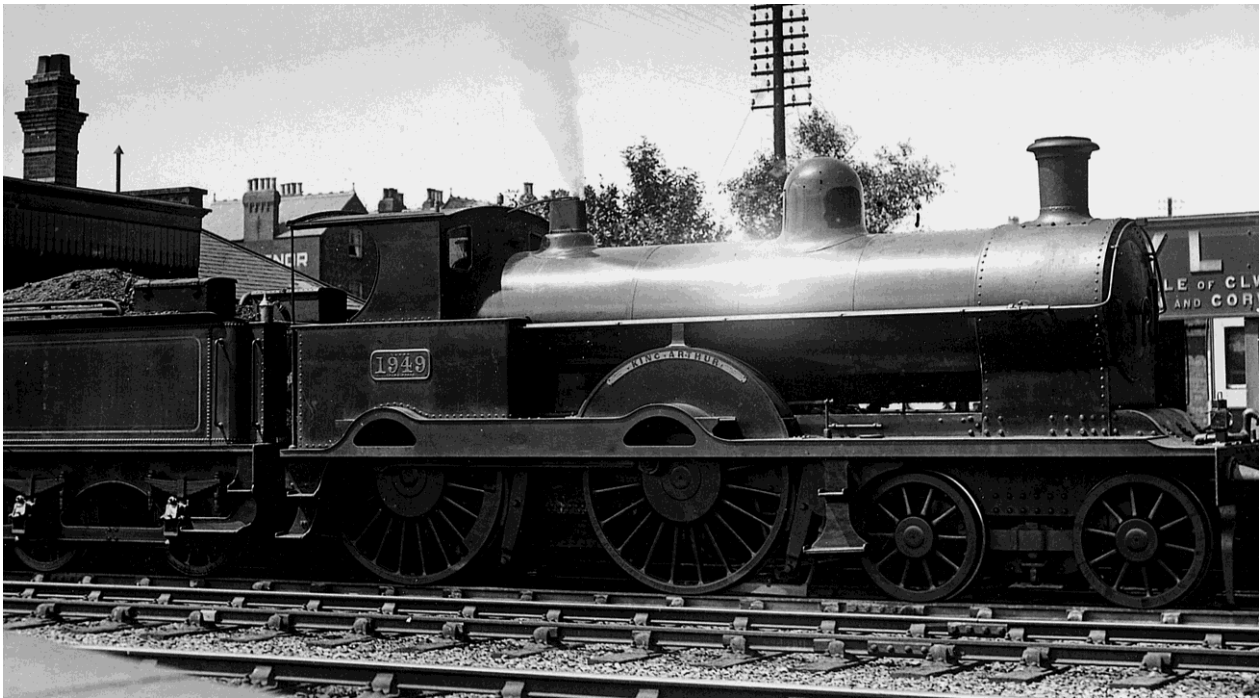
LNWR *Orion* in her blackberry black glory, after being 'Benbowed': plain hues, well-proportioned, outside cylinders and valve gear - form following function as a well-found machine ought to look.

Author's Collection

Informed Crewe opinion was that the much-improved 'Alfreds' could have touched even higher registers had they been superheated, but that was not to be with the sole exception of No. 1974 *Howe*.

Nevertheless, Whale went one step further with his Webb compound inheritance. At heart he was a pragmatist who favoured robust locomotives that could be driven hard and reliably, like his eminently thrashable 4-4-0s. These may not have been at the cutting edge of locomotive technology, but they delivered the goods most effectively.⁴

Eventually, most 'Jubilees' and 'Alfreds' were converted into two-cylinder simples. This operation was achieved by removing the outside, high pressure cylinders and lining up the inside, former low pressure cylinders to 18½in - the original diameter of 20½in would have drained the boiler of steam in quick measure. The 24in stroke remained. The outcome, known as the 'Renowns', was eminently successful. They have generally and sensibly been perceived as mini-'Precursors', lively and capable.



'Renown' LNWR No.1949 *King Arthur* at Rhyl - very much the 'light Precursor' in appearance: plain black livery and with Whale 3,000 gallon tender.

SLS Collection

The pioneer, No.1918 *Renown*, proved the worth of this final conversion by whipping the 'City to City' express from Wolverhampton (not then a city) via Birmingham New Street to London Broad Street in 2hr 35min. With all deference to F.W. Webb, it seems that Whale's wand at last sprung his predecessor's 4-4-0s into strong action once they were released from their problematic compounding system. On one occasion 'Renown' *Canopus*, No. 1913, took the 'City to City' from Willesden Junction to Coventry, 88.6 miles, in 91min 30sec.⁵ *Orion* was 'Renowned' in April 1917 and withdrawn in 1928 as LMS No.5148, being scrapped in February of that year.

Looking at the convolutions of pipes, distributors and receivers at the front end of their one-sixth scale replica, one wonders if the Chapelon touch might not have transformed these machines more effectively than the approaches chosen by Webb and Whale - but that is counterfactual history. Meanwhile, the scaled-down *Orion* was left in its original form, changed into neither a 'Benbow' nor a 'Renown', but 'improved' in other ways by its only begetter, Richard Darroch, to whom we now turn.

George Richard Sutton Darroch

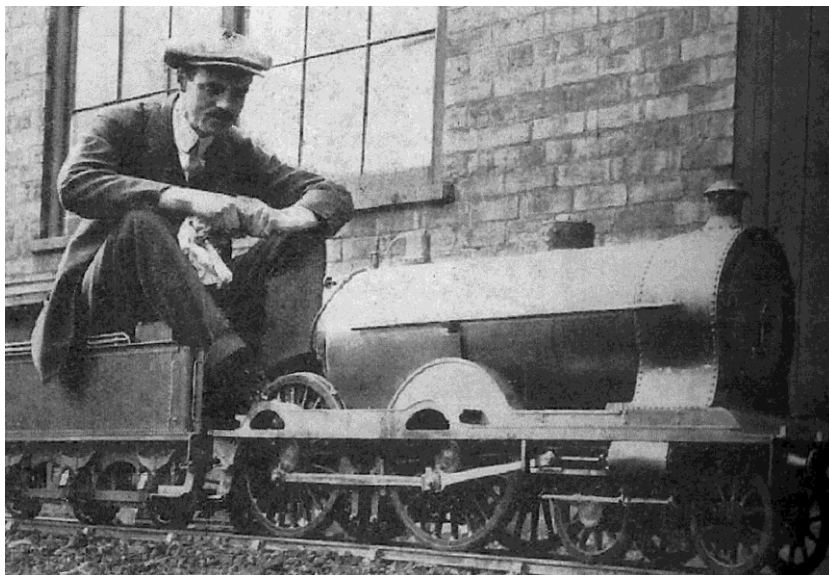
In contemplating the life and achievements of Richard Darroch (1880-1959), *Orion's* chief constructor,⁶ one is tempted cliché-wards to statements about breaking moulds and not making them like that any more. Although Darroch was a not untypical product of his times, he seems to have been unusually blessed with talent, charm and comparative affluence.

He was born into a well-off middle class family and educated at Eton. His desire to become an engineer was met by him gaining a premium apprenticeship at Crewe under F.W. Webb - part of the railway Oxbridge when it came to turning out a first rate engineer in those days. His

apprenticeship started in 1899; in 1901 he became a pupil of F.W.Webb, but completed his training under George Whale. It was during his time at Crewe that he conceived *Orion* and started its construction. In spite of the thoroughness of his training, there was no guarantee of a subsequent job on the LNWR, although Darroch was actually employed as a draughtsman at the time of his resignation, 27 July 1905.

It was during his time at Crewe that he conceived *Orion* and started its construction. Although the record of his life is incomplete, there are hints that Whale was somewhat reluctant to take over all of Webb's apprentices and certainly Darroch left Crewe for a while after completing his term.

Three theories have been proffered regarding *Orion's* unusual 'Precursor' boiler, which caused Darroch to adjust its frames away from being a perfect simulacrum of the 'Alfred' originals. One is that Darroch had the boiler constructed in order to impress Whale, designer of the full-scale type. Courtly flattery, however, seems not to have been one of Darroch's attributes. Equally likely is the phenomenal steam-raising capacity of the 'Precursor' boiler and Darroch's knowledge that the ability to crowd on steam might overcome some of the deficiencies of Webb's four-cylinder compounding system, although admittedly his *Orion* was only likely to perform modest tasks on miniature railways.



An unfinished *Orion* with Darroch at the controls.

Courtesy Bob Chester-Lamb

The third theory is more intriguing and has some basis in Crewe folklore. Its main source was the late Colonel Kenneth Cantlie, sometime pupil of C. J. Bowen Cooke, Chief Mechanical Engineer of the LNWR 1909-20. Cantlie apparently put it to his chief that a 'Precursor' boiler on an 'Alfred' might work wonders. Bowen Cooke agreed, but pointed out that the relatively longer 'Precursor' boiler would require a modification of the 'Alfred' frames and that the cost involved would not be justified. Cantlie's apprenticeship took place from 1916 to 1920, so it may have been that the notion of a 'Precursored Alfred' had been floating about at Crewe for some time; it was hardly revolutionary.⁷ The three theories are not mutually incompatible in any case.

When Darroch left Crewe in 1905 he moved to Reigate in Surrey, where he was an automobile engineer at Reigate Garage Limited, residing at Storth, Furzefield Crescent. He had sufficient funds to have had a copper boiler manufactured privately for *Orion* and to have the engine's finishing touches completed by Bassett-Lowke's works in Northampton - very much a rich man's indulgence.

He indulged his mechanical interests in other ways. Attracted by early flying, he paid for tuition by Louis Blériot, pioneer cross-Channel aviator and, in 1911, duly obtained one of Britain's first pilot licences. He bought an aeroplane of his own and complemented it with a fiercely powerful Itala car, then regarded as the last cry in stylish motoring. He remained a lifelong bachelor, his main companions being a series of fine bulldogs. In 1912 he visited Canada and the USA, the relevant documentation recording him as a mechanical engineer.

When the Great War broke out in 1914 Darroch was quickly up and away, helping to organize a motorized unit under the aegis of the Royal Armoured Corps; it saw action at the battle of the Marne. Having been declared medically unfit for the British army, Darroch volunteered at once for the French army. He saw plenty of action thereafter as an ambulance driver in the thick of fighting on the grim Balkans front; Darroch and friends at London clubs, used his Itala tourer and a Bianchi ambulance that did courageous work rescuing the wounded. He was awarded the Croix de Guerre. Invalided out once more, he returned to Crewe in June 1917.

The LNWR works was fully engaged not only in keeping its hard-worked fleet of locomotives at work but also in munitions production. The new regime at Crewe - C.J. Bowen Cooke as CME and H.P.M. Beames as 'Chief Assistant to Works Manager, in charge of Munitions Production' - was glad to have Darroch on board. Having returned to the railway fold, he rose to become Assistant Works Manager, Crewe.⁸ Darroch stayed there until he retired, in LMS days, in 1941.

His main luxury in those years was to run a fine Bugatti car. So seriously did he take its well-being that he drove it to a London agent for servicing, and on one occasion, to the Bugatti factory in France.⁹ Having his doubts about the skills of Crewe's barbers, he motored occasionally as far as London for a haircut; before taking the driving seat, he removed his walking shoes and put on a softer pair for mastering the sensitivities of the controls.

He is still remembered by some and always with affection. His generosity was legendary. In his early returned years in Crewe he constructed a 9.5in gauge track for *Orion* in his garden at 4 Wellington Villas - a company house lying in the direction of the Chester line. Having constructed a turntable and two open carriages, he steamed *Orion* and gave free trips to interested parties. One correspondent recalled a model engine he gave to a young enthusiast; another that there was a *Daily Mail* article (14 March 1960) reporting Darroch's bequest to a blind boy whom he had befriended and tutored in French.

Geoffrey Beames, son of H.P.M.B., remembered Darroch's excellence as a pianist and his nimble dancing of the Lancers well into his seventies. Darroch died aged 79 on 3 December 1959.

Apart from *Orion*, Darroch's main contribution to railway history is his invaluable *Deeds of a Great Railway*, a 217-page book published in 1920. Although this work has much useful material on the LNWR's mainstream operations during World War I, its principal focus is a first-

hand description of life and work at Crewe in its munitions-producing days. The text crackles with erudition and wit: Greek and Latin tags, quotations from Napoleon, Goethe, etc. Of the Premier Line's record during the complex mobilization of 1914, Darroch quoted with approval L.W. Horne, secretary to the Railway Executive Committee: 'Not a hitch occurred'; surveying our present rail scene, one wonders. Darroch's page headings are classics in their own right: 'Ludendorff Despondent', '*Experientia docet*', 'Euston, The Quest of All', 'Female Phenomena', 'LNW Staff Indefatigable' - nearly all of a positive, no-nonsense kind.

Orion 'The Heritage Engine'

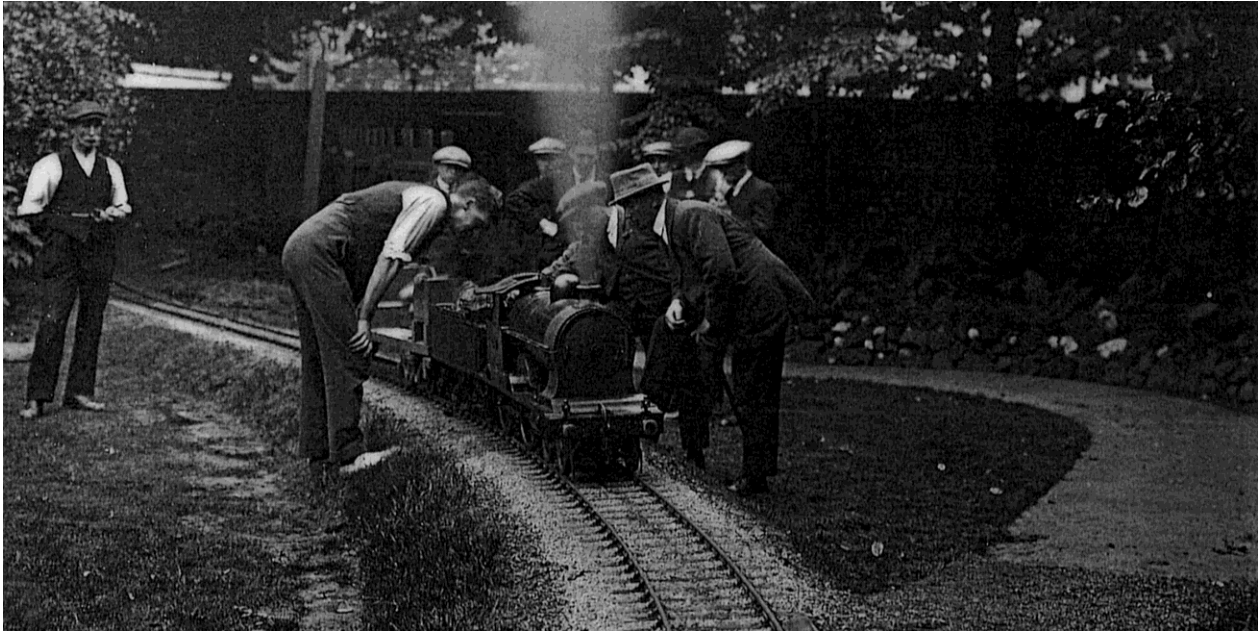
The one-sixth scale *Orion* is best described as an 'Improved Alfred' in view of the 'Precursor' boiler that renders it quite unique.¹¹

The miniature *Orion* was designed and constructed, mainly by Richard Darroch, principally in the Crewe Mechanics' Institute. Some materials were obtained, even fabricated, at the main works, but necessarily away from official gaze. The hierarchy seems to have known what was afoot and indulged it. In any case, in spite of his dread reputation, it appears that Webb was not averse to this kind of thing going on (and may have done something similar during his own apprenticeship) providing it enhanced an apprentice's skills and was no charge to the company.

Still, the semi-clandestine nature of *Orion's* origins add spice to the tale. Darroch recalled a helpful friend leaving the works with part of *Orion's* frames tucked down a trouser leg. Other Crewe workers gave assistance at the Institute until the stage that the frames, wheels and motion were virtually complete. It was at this point Darroch left Crewe and had to have the final erection and finishing contracted out. The boiler, already constructed, was a finely-made copper product from Messrs. Goodhand, Gillingham, Kent, tested hydraulically to 250lb sq in. The final stages of erection were carried out at Northampton by Bassett-Lowke. There has been some speculation that the excellent proportioning of *Orion's* valve gears and boiler may have owed something to the talents of Bassett-Lowke's collaborator, Henry Greenly (Rodney Weaver, *Premier Lines*, 1993). There is no firm record of when *Orion* was complete and steamable; the general consensus is 'about 1910-1912'.

The scaling down of an 'Alfred' exacted its price and could never be perfect in any case given Darroch's ambition to employ a 'Precursor' boiler. For example, the acoustics of a truly scaled-down whistle would result in a thin, barely audible piping. Accordingly, an over-scale brass whistle had to be mounted under the cab. The cylinder lubricators are for show only; real lubrication is hand-worked from the cab; other boiler fittings are, however, properly functional. The screw reverse, correctly scaled, remains something of a pain to operate and a threat to the driver's knuckles. More seriously, the correctly scaled wheel tyres have proved rather thin for all but tailor-made 9.5in gauge track.¹²

Darroch paid close attention to the track question, commissioning some specially rolled rails from Pearson & Knowles Coal & Iron Co., Warrington (one sixth of 85lb/yd). The ten-foot rails came with four joint chairs, 44 common chairs and 24 sleepers each. The chairs rested on felt pads, LNWR style. Because the bull-head originals are now mostly lost or worn, the SLS has recently had 45 metres of flat-bottomed track constructed for *Orion*.¹³



From Darroch's own album: 'In the grounds of 4 Wellington Villas, Crewe' - probably the occasion when H.P.M. Beames and family paid a visit.

Broadbent Collection

Orion came into its own once Darroch had returned to Crewe in 1917. Here, in his Wellington Villas garden, he laid 100 yards of his track, complete with a 2ft-high embankment, around a ten-chain curve with a light gradient (1 in 144) and the requisite super-elevation of 0.5in. After a short, straight section the line ran into a terminus by a greenhouse. A photograph, by Bassett-Lowke himself, of the fine LNWR-style engine shed appeared in Winchester's *Railway Wonders of the World* (mid-1930s). Because he had insufficient room for a full loop, Darroch constructed a massive turntable which still survives.

Having added two open passenger wagons (painted in true LNWR livery), the Darroch Garden Railway was in business; it was found that *Orion* could manage up to twelve adults and three children, about a ton of humanity. His engine and railway became popular in Crewe and an early photograph of its operations shows most of the menfolk of the Beames clan aboard.

Darroch publicized *Orion* in various ways including a published interview with a correspondent of *Models, Railways and Locomotives* (December 1912) from which we learn that the boiler was manufactured more or less contemporaneously with the main frame work going on at Crewe, i.e. about 1905. Darroch himself ('Assistant-Engineer, L M & S Railways (*sic*) Crewe Works') wrote a piece for *The Model Engineer & Electrician*, 5 July 1923, 'A Working Model 2-in Locomotive'. This was couched in his customary, sparkling style and it ranged widely: 'Model making is no slacker's job'; 'Construction involves ... a considerable smattering of the arts, respectively, of a draughtsman, a pattern-maker, a moulder, a marker-off...' He recalled having to build *Orion* within the imperatives of work at Crewe: 'brutally disturbed from one's slumbers by a 5.30 am buzzer, one staggered forth in the inky black of a winter's night to commence the burden of a 9½ hour day.'

One intriguing calculation performed by Darroch in his paper throws light in many directions. He calculated that the labour cost 'on a pre-war basis' of constructing an 'Alfred' was £720. Divided

by six, *Orion's* scale, that ought to be £120. In fact, *Orion's* construction had cost him an estimated eighteen hours per week, 4,320 hours in all which, at an apprentice's flat rate of 15s (75p) per week, came to about £60. But then, as he admitted, he got so much skilled assistance *gratis* and had to buy in the boiler and Bassett-Lowke finishing that the total cost (alas, not stated) 'Considerably exceed(ed)... one sixth part of the cost of building a full-size engine.'

Darroch's further calculations regarding the conversion of linear to volumetric scale are a model of their kind. For example, *Orion's* total heating surface (13.8sq ft) is not one-sixth but $\frac{1}{109}$ of the 1,507sq ft of an 'Alfred'. For some reason Darroch cited one square foot difference from the official drawings, or $\frac{1}{142}$ of a 'Precursor' boiler.

His last foray into *Orion* public relations came in the *Railway Magazine*, February 1931¹⁴. In this, Darroch's anonymous interviewer celebrated *Orion's* appearance at the Liverpool & Manchester centenary celebrations at the St. George's Hall, Liverpool. The article adds little to previous effusions, except to emphasise that *Orion* had a crank axle of malleable steel 'Modelled on the well-known Crewe built-up principle'. The crank axle, incidentally, was still painted off-white, as per Crewe standards, when *Orion* went for safe keeping at Penrhyn Castle, some 40 years later.

Orion Lost --- and Found

The Liverpool exhibition appears to have been *Orion's* last truly public appearance before modern times. She was Model No.51 of 55 models: 'London & North Western 4-cylinder compound locomotive, Alfred the Great Class, altered with large boiler (G R S Darroch)'. After the exhibition had been opened by Brigadier-General C.G. Dawes, US Ambassador, *Orion* was on view from 13-20 September 1930. The models were later inspected by the Merseyside and LMS hierarchies, led by Liverpool's Lord Mayor and Sir Josiah Stamp of the LMS. Other models included *Lord of the Isle (sic)*,¹⁵ a 'North Western Engine made by Mr. G. G. Poston, Moreton, Wirral', an NBR Atlantic, Hedley's 'Wylam Dilly', a Caledonian 'Dunalastair' and a Santa Fe Mallet 'Complete with bogey and cow-catcher'.

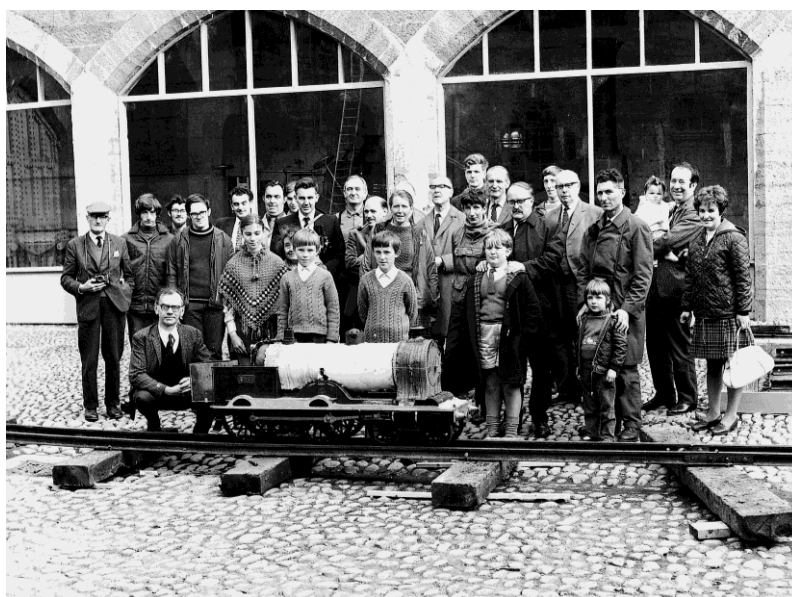
After such hype and excitements, *Orion's* life went quiet. Darroch occasionally steamed it in his garden; friends, neighbours and sometimes visitors were granted a ride. However, as he grew older the steamings were fewer. When he passed away in 1959 he bequeathed *Orion*, together with its trappings, rails, turntable and rolling stock, to the Stephenson Locomotive Society, although his original intention was to bequeath the locomotive to his trustees so that his brother-in-law, the Rev. Walter N Long 'could enjoy its use during his lifetime'. Thereafter, it was to be sold to the Railway Veterans' Institute at Crewe to whom he had already left £100. What caused Darroch to change his mind is not known, but the SLS North Western Area Chairman, J F Thomas is specifically mentioned in the final codicil of his will and may have put forward a persuasive argument. Whatever, there was good logic in Darroch's change of mind.

The SLS, the 'Premier Railway Society',¹⁶ had already pioneered the private preservation and heritage movements, which have come to flourish mightily in our own times, by purchasing the Stroudley 0-4-2 *Gladstone* in 1927. The SLS networking was such that it persuaded the LNER to house this great immortal in its York Railway Museum. In later years the SLS presented it to the National Railway Museum in York where its magnificence is admired daily by thousands of visitors.

Since the SLS had preserved much more besides *Gladstone*, and had good connections, Darroch was presumably impressed by its serious commitment to keeping railway history alive and well - there is evidence that he actually handed over *Orion* a few months before his death. The immediate task facing the Society, of housing *Orion*, was met by W.H.D. Faulkner of Birmingham who housed the engine at Tywyn, North Wales, with co-operation from another heritage pioneer, the Talyllyn Railway.

In 1965 *Orion* was moved to the care of the Industrial Railway Museum at Penrhyn Castle where the National Trust, owner of Penrhyn Castle, undertook some initial restoration work, including relining the 'Precursor'-type tender, under the supervision of its resident engineer, Iowerth Jones. However, with many other calls upon NT funds and time, progress was necessarily modest. The SLS agent for keeping an eye on *Orion* and its exhibition, Harold Bowtell¹⁷, urged an acceleration of *Orion's* restoration before its deterioration went too far.

Lack of finance was the chief cause of *Orion's* slow restoration. Nevertheless, having repossessed the 99-year-old veteran, stored it in Shrewsbury with the help of John Rowlinson and then completed the necessary paperwork, the SLS was able to obtain generous assistance from the Heritage Lottery Fund to put Darroch's masterpiece back into steam and public circulation. Full restoration costs amounted to some £15,000 (see Darroch's estimates for original costs, above - and learn about inflation and relative costs) of which the HLF paid half, the rest coming from SLS funds.



An SLS visit to Penrhyn Castle 1970 to inspect *Orion* partly restored by Iowerth Jones (back row, sixth from left). Left-hand end: Harold Bowtell, chronicler of upland Britain's reservoir railways and *Orion's* protector; kneeling G. Dudley Whitworth, LNER expert; fourth from right, John Marshall, historian of the LJR and much else.

Dr Keith Jagger

Restoration of the locomotive was carried out by John Ellis, copper and boilersmith, and model engineer of Brierley Hill, in three stages: boiler fittings, engine and chassis, final painting. The latter was in best Crewe 'blackberry black' with the correct 'cauliflower' Britannia emblem transferred on to the splashers.

Orion was displayed, unsteamed, at the York Railfest 2004, returned to Brierley Hill for steam tests and duly passed by John Glaze, boiler inspector, for the requisite certificate. Early testing revealed that, like many compounds, *Orion* had a soft exhaust and that it was necessary, on occasion, to drive her with the blower operating. There were other quirks that had to be relearned. For example, on closing the highly sensitive regulator, *Orion* could 'run on' because of steam lurking in the system and still doing its work in the low-pressure cylinders. The right-hand injector worked at 40lb sq in, the left at 60lb sq in, and so on.

The first public steaming was at Colwall on the private railway of the Downs School, of the requisite 9.5in gauge, on 24th April 2005.¹⁸ *Orion's* drivers on that occasion were Ian Johnson, a former Crewe apprentice, and Derek Cobby, formerly of the GWR at Swindon and Bagnall's of Stafford, thus connecting the Heritage Engine and the occasion to the 'great tradition' of British steam engineering.



Bill Broadbent, LMS and BR, gives *Orion* the green flag at Downs School, Colwall on 24 April, 2005. Driver, Ian Johnson watched by co-driver Derek Cobby and, to left of Bill Broadbent, Edward Talbot, LNWR motive power historian

Bruce I Nathan

The Crewe mystique was present in another way on this day. The green flag for the steaming away was waved by Bill Broadbent, a former Crewe apprentice from LMS days, later shedmaster at Holyhead, BR, and a pillar of the railway heritage movement¹⁹. Broadbent had known Darroch and quoted the great man's definition of a gentleman, a long-defunct species but whose attributes, according to Broadbent, were amply present in Darroch himself: 'Gentle as a woman and manly as a man'.

Although we may not now be able to replicate the classic gentlemen or ladies (by Darroch's definitions), we nevertheless have in our possession a true and authentic product of times when such people trod the earth; when F.W. Webb presided at Crewe and thousands of people kept not only the LNWR but much else on the move by dint of skills and mysteries that are, in British terms, rather rare in the early 21st century. For which reason, the admirable *Orion* is truly a 'Heritage Engine', connecting directly with the Britain of a lost era.

Experiencing *Orion*

In keeping with the intentions of the SLS and the requirements of the Heritage Lottery Fund, *Orion* is on display at 'Locomotion', the NRM at Shildon. It is intended to put it in steam there from time to time and to exhibit it at various railway fairs around the country. For details, see the SLS website: www.stephensonloco.org.uk

Nomenclature

Orion was named after neither the Boetian hunter nor his constellation which dominates northern skies in winter time. For many years it was believed that it was named after HMS *Orion*, an armoured corvette (1879-1909) later HMS *Orontes*, depot ship at Malta 1909-13. Recent research reveals, however, that it was named after PS *Orion* on which Darroch's uncle Duncan, 5th Laird of Gourock, was a passenger. It was wrecked off Portpatrick in 1850 on a Liverpool-Glasgow passage; Duncan Darroch fortunately escaped. ²⁰

Jim Pike, *op cit*, lists eighteen *Orions* from the Tayleur 0-4-0 of the Liverpool & Manchester Railway (1834) to BR No. D1667, later 47 633, a diesel-electric. Curiously he does not list the LNWR *Orion* in question, so we might say there have been 'about twenty' British *Orions*. There were others elsewhere, e g in France, where the Midi ran No.709 *Orion*, an 0-8-0 (Cail, 1863) which outlasted its LNWR cognomen, withdrawn in 1934.

There was also a kitchen-diner Pullman *Orion*, 1951. It is now preserved at Pecorama, Beer, Devon.

LNWR locomotive classification was a trifle long-winded. It ran thus:

'Alfreds': '7ft 0in Four Coupled Passenger Engine, 'Alfred the Great' Class'.

'Benbows': ditto. 'Benbow' was a colloquialism.

'Renowns': '7ft 0in Four Coupled Simple Passenger Engines', distinguished from other two-cylinder simple 4-4-0s partly by virtue of distinct wheel diameter, partly by the subtleties of Crewe semantics.

Orion, in 'Crewese', might therefore be a '1ft 2in Four Coupled Passenger Engine, Improved 'Alfred the Great' Class'.

Comparative dimensions:

	'Alfred the Great' Class LNWR	<i>Orion</i>
Driving Wheels	7ft 1in	1 ft 2in
Cylinders	15+20.5 x 24in*	2.5+3 ¹³ / ₃₂ x 4in
Grate	20.5 sq ft	76 sq in
Boiler pressure	200lb/sq in	90 lb/sq in
Tender	2-2,500 galls, 5 tons	9 galls, 1cwt
Weight	57 tons 12 cwt	10cwt

*'Alfred' hp cylinders were originally 16in diameter.

Orion 100

In order to celebrate Orion's centenary in 2011 the SLS commissioned two events. The first involved a special steaming at 'Locomotion', NRM Shildon during the weekend of 21-22 May when Orion was put through its paces in front of an admiring audience, young and old. The second event, on 11 June was very different; a memorial service to commemorate the life and work of Richard Darroch at St Bartholomew's Church, Wigginton near Tring, Hertfordshire where he is interred. The Chairman of the SLS, Brian Lewis, played the 1877 vintage church organ with great aplomb, following which SLS Vice-President Derek Cobby, who has done much to assist the upkeep of Orion, laid a wreath on Darroch's grave. The service was attended by Claire Darroch-Thompson, 8th Laird of Gourock, Lady of the Barony of Gourock and Darroch's great-great-niece. All the previous Lairds, including Darroch's shipwrecked uncle, were named Duncan, the first having acquired the Scottish Barony of Gourock from the Stuarts of Castlemilk in 1784. Like Orion, its builder has a distinctly interesting pedigree.



Top: *Orion* at Locomotion, Shildon, 9 May 2006.

Bottom: *Orion* on a visit to a private 9½inch gauge railway at her home town of Crewe and hauling a suitably restored vehicle on 18 June 2006. *N.R. Knight*



9½" gauge LNWR 1957 ORION at Crewe, 18.6.2006

© N.R.Knight

Further Reading

In addition to the SLS archives and library, the following have been consulted:

G.R.S. Darroch, *Deeds of a Great Railway*, 1920.

Bob Essery and David Jenkinson, *An Illustrated History of LMS Locomotives*, 1981.

John Goodman, *L&NWR Locomotive Names*, 2002

Jim Pike, *Locomotive Names*, 2000.

O.S. Nock, *Premier Line, The Story of London & North Western Locomotives*, 1952.

Brian Reed, *Crewe Locomotive Works and its Men*, 1982

M. Reed, *The London & North Western Railway*, 1996.

J.T. van Riemsdijk, *Compound Locomotives*, 1994

M Rutherford, 'Handing on the Baton', *Backtrack* 2002-03, esp January 2003.

E. Talbot, *An Illustrated History of LNWR Engines*, 1984.

W.A. Tuplin, *North Western Steam*, 1963.

Stephenson Locomotive Society, *Journal*, esp Aug 1965, Feb 1977, Nov-Dec 2004, Mar-Apr and July-Aug 2005.

London & North Western Railway Society, *LNW Journal*, various 1993, and *Premier Lines* 1992-93

Other journals and newspapers quoted in main text.

The authors thank the following for assistance and advice: Allan C. Baker, the late W. Broadbent, the late Reg Carter, Bob Chester-Lamb, Derek Cobby, Graham Hardy, Ian Johnson, Brian Lewis, Ruth Moston, Bruce Nathan, and the following members of the LNWR Society: Ted Talbot, President and David Pennington, Archivist and Librarian.

References

1. See Further Reading list, especially Nock, Talbot, and Tuplin; see also, M. Rutherford, 'Handing on the Baton', Pt 3, *Backtrack* January 2003. In the same number of *BT*, David Jenkinson on 'The Midland Compounds in Retrospect' has some useful asides on the Webb system.
2. The saga of Webb's experiments with valve gears for his compounds is a complex one, involving duplex reversers, slip eccentrics, derived motion, etc. See Note 1 for sources that will throw light upon these and other complexities.
3. For closer insights into these problems, see the definitive work on the mysteries of compounding, J. van Riemsdijk, *Compound Locomotives*, 1994.
4. See Panhard's response to horror expressed at his immortal invention of the crash gearbox: *c'est brutal, mais ça marche* - 'crude but effective' in colloquial English.
5. O.S. Nock, *Premier Line*, 1952.
6. His full nomenclature was George Richard Sutton Darroch, but he was generally known as Richard Darroch; information supplied by the late Bill Broadbent.
7. Bowen Cooke used the 'improved Alfred' analogy in another way. Irritated by claims that his 4-6-0 'Claughtons' were based on GWR ideas 'He was wont to say that one might as well describe Claughtons as Alfreds with the compounding eliminated and an extra coupled axle added' (Brian Reed, *op cit*).
8. His precise title varies in the record, variously 'An', 'The', AWM; but 'Assistant to the Chief Mechanical Engineer' in his book. H. P. M. Beames became Deputy CME, the only person to hold this title in LNWR history, and for a brief year, 1920, CME. His major contribution to Crewe, in LMS days, was to pioneer the 'Fordist' assembly line system.
9. At Molsheim, Bas-Rhin. Darroch's Bugatti still exists. Paul Gibbons, of the Bugatti Owners' Club informs the SLS that the motor car in question (Bugatti type 57, chassis 57102) was bought by Darroch in 1936. He bequeathed it to Wendy Beames, wife of Geoffrey H.P. Beames – the son of the former LNWR CME. Wendy Beames sold the car soon after Darroch's death. The UK registration number was CTU 415. After restoration and rebuilding it is now kept in Switzerland.
10. Some of Geoffrey Beames' memoirs can be found in the *Crewe Chronicle*, 12 December 1959.
11. There is another Crewe-built miniature 'Alfred', No.1941 *Alfred the Great*, also 9.5in gauge, with an 'Alfred' boiler, constructed by Harry Powell, erstwhile foreman of the Copper Shop at Crewe. The model, constructed for Captain Vivian Hewitt, RNVR of Bryn Aber, Anglesey (1885-1965) and later bought by J. C. Bamford of Uttoxeter - originator of the well-known JCB - was put up for auction, unsuccessfully, in November, 2004. Although perfectly scaled, and from Crewe, it is of course a product of the 1950s, not, like *Orion*, from the roaring days of Webb and Whale. *Orion's* tender, incidentally, is of a scaled-down Whale design, as used with the 'Precursor' Class; the prototype 'Alfreds' had Webb tenders.
12. Another enigma: Darroch wrote frequently of *Orion's* '9¾ inch gauge'; modern experts find it to be 9½ inches, give or take slightly, the gauge cited in the earliest published reference to the engine, 1912.
13. By Derek Cobby, Vice-President, SLS.
14. 'An Interesting Locomotive Model', pp 91-94 of *Railway Magazine*, Vol. LXVIII, No.404.
15. So rendered by the official programme, *Centenary Celebrations at Liverpool*, ed Matthew Anderson.
16. Founded 1909, if not the oldest body of locomotivists, probably the earliest and longest-running open society in the field.
17. Doubtless known to many readers as the chief chronicler of the reservoir-construction railways of upland Britain and author of railway histories of Cumbria *inter alia*.
18. For details of this unusual school railway, see J.I.C. Boyd, *Don't Stand up in the Tunnel*.
19. Broadbent had also been Chairman of the Ffestiniog Railway, 1952-55, and of the Severn Valley Railway, 1979-1987.



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Appendix – Additional photographic material

1. Darroch and his bulldog Sunny in 1911. (courtesy Alasdair Darroch)



2. Darroch and his Blériot monoplane with which he gained his flying certificate on 14 February 1911 - the 59th British aviator to do so. (courtesy Malcolm Darroch)



3. The 25hp Bianchi ambulance which accompanied Darroch to the Balkans. It is seen here with registration number LB 3551 outside the Athenaeum Club, Pall Mall, London on 4 March 1915.
(courtesy Alasdair Darroch)



4. Darroch with his bulldog and Orion by the turntable at 4 Wellington Villas, Crewe. (courtesy Malcolm Darroch)



5. Darroch with a lady companion and his Bugatti at Land's End in September 1955.

(Maggie Ryan Collection)





6. Darroch's Bugatti as preserved in Switzerland (The Bugatti Trust)



7. 'Orion' and admirers in the garden at 4 Wellington Villas. Darroch is standing at the head of the train. (Nigel Payton, courtesy Ruth Moston)