## VELSH HIGHLAN September 2015 JERITAGE ISSN 1462-1371 Issue No. 68

Web : www.welshhighlandheritage.co.uk

# KS 4415 Update

err, Stuart Works No 4415 is a 2' gauge railway locomotive which defines a seismic shift for land transport in the UK: it was the first successful British diesel locomotive.

Constructed as a demonstrator model in 1928, the publicity associated with its launch highlighted that the days of the steam locomotive were numbered. The title of the accompanying brochure However, says it all - "15 Shillings Change". Kerr, commenced at Boston Lodge, with the

### David High reviews progress towards the full restoration of Kerr Stuart 4415

UK in 1997 and it has been stored undercover since that date awaiting restoration. Previous attempts to see the locomotive restored by external bodies have failed.

restoration has now funded. W.H.R.H.G. has been the first organisation to step up to the mark to plug the £13,800 gap, with a pledge of £1,500 spread over the next 3 years and a strategy exists to approach a

wide range of other organisations to seek funding on a similar basis. Clearly the sooner this gap can be closed the more secure the project will be and any help that can be provided in the short term will make the grant opportunity more viable.

Having agreed a strategy for restoration with 'F.R. & W.H.R. Heritage Ltd.', the locomotive's owners, the time for waiting is over and a start has been made on physical work.

A very comprehensive set of working drawings has been acquired from The Hunslet Archive (Hunslet took over the goodwill of Kerr, Stuart in 1930 to reap the Diesel seeds that they had sown). We have nearly completed a strip-down of the locomotive into its component parts.

The plan for restoration is in place and the immediate objective is to create a rolling chassis within the next 12 months.

The strip down process has been quite encouraging, as a lot of the components are in better condition that anticipated from an initial inspection.

Once the strip down is complete the first big task will be to get the chassis block grit blasted and then to work our way progressively into the re-build process.

14th September 2014. At Boston Lodge. With the massive Mauritian sand boxes and the tatty front cover removed KS 4415 already looked a lot better. While the bottom of the body is clearly rotten, much of the original material can nevertheless be recovered. Rob Bishop.

Stuart's case was that the cost of running a Diesel locomotive is only 25% of the cost of steam traction. There must have a been some truth in this as the Diesel is now ubiquitous!

Initially 4415 operated on the Welsh Highland and Festiniog Railways. In 1934 it was sold to a sugar plantation in PRISM Fund . Their response has been Mauritius, where it ran successfully for many years. It was repatriated to the

work being undertaken by a volunteer team. One of the obvious advantages of volunteer-led project is that it reduces the project budget from £93,800 to £53,900. A fund of £20,000 already exists, held by the Ffestiniog Railway Society. An approach for a grant of David High - July 2015 £20,000 has recently been made to the encouraging, but to have any chance of success the project must be fully





April 11<sup>th</sup> 2015. Stripped of the body, it looks just like the General Arrangement drawing reproduced in the 11<sup>th</sup> January 1929 copy of *Engineering*. The box with the sloped casing on the right is the gearbox. This drives through spur gears onto the 'lay shaft', the red cover of which is located in the frames. The central box on the cross-braced frame is the fuel tank, with the drive shaft between the engine and the gear box located beneath. It has a cone-type clutch located in the red flywheel on the right-hand side of the engine. Rob Bishop

May 3<sup>rd</sup> 2015. The wheel sets, with springs attached to the top of the axle boxes and the turnbuckle chain tensioners. The tensioner between the leading & central axle box was missing, the flat bar installed to allow the loco to be moved to Boston Lodge can clearly be seen. The near side far spring is also missing, but the temporary packers for the move can be seen. The tyres have a lot of life in them, and the journals & bearing are in such good condition that they can be re-used without any work. Subject to a detailed measure up the sprockets also appear to be serviceable, and a potential chain supplier has been identified. An immediate priority is to refurbish the springs, including the supply of a replacement. These are palleted up, ready for dispatch, with a copy of the original drawing. Job No 2 is to fettle up the tensioners and manufacture a replacement. Again, the original drawings are available. Rob Bishop





May  $3^{rd}$  2015. Removing the lay shaft. On the left is the transmission band brake (which isn't actually on the transmission). Next to this the sprocket for the chain drive to the wheels can than be glimpsed, followed by the spur gear which is the final link from the gear box. Rob Bishop

July 9<sup>th</sup> 2015. Needle gunning the worst of the scale from the frames, prior to grit blasting. The lay shaft has now been removed (right - note the 'empty' hole in the frame), together with the handbrake column and foot plating (left). Rob Bishop



## Of Baldwins and Flanges

I live in the hope that the articles presented in *WHH* which, from time to time at least, occasionally border on the fringes of speculation, will prompt dialogue and input that may contribute to clarifying aspects of our favourite railway's history.

My recent observations on the differences between the driving wheel flange arrangements on the Welsh Highland's original Baldwin, No. 590, and the Imperial War Museum's Baldwin, No. 794, currently under restoration to represent the original '590', certainly seem to have worked! There has been significant communication subsequent to the appearance of the notes on the back page of Issue 66 which has mainly served to demonstrate just how 'murky' this particular slice of our history is. As a step towards clarifying (hopefully!) this story I have tried to put together a series of notes based on this recent correspondence and on visits to original source material. These notes may well pose more questions than they answer, but if they trigger a constructive wider dialogue some of these outstanding questions hopefully can be answered. Whilst there is much to be gleaned from a study of the Specifications for these locomotives and perhaps one day a more thorough set of notes might emerge, for now I will concentrate just on the issues raised in WHH 66 p. 12.

The Collection of Baldwin Locomotive Works Records from 1856 to 1956 is held in the DeGolyer Library at the Southern Methodist University, Dallas, Texas. Much of what follows is extracted from that collection and credit for their permission to use this information is duly acknowledged.

## The Baldwin Locomotive Classification System (1842 to ca. 1940)

The War Department Light Railways (WDLR) Baldwins were of the builder's 10-12 D Class. A brief explanation of the 'novel' Baldwin classification system seems appropriate before we dig further into the detail. Their basic classification system comprised two sets of digits and a letter, but there were additions to this which will be discussed below.

The first digit(s) simply indicated the total number of wheels underneath the locomotive, without any indication as to type of wheel.

The second group of digits indicated the locomotive's cylinder diameter, but in a somewhat abstruse manner.

To find the cylinder diameter from this number in the classification, the number has to be halved and then have '3' added to it. Thus the '12' in our classification equates to a cylinder diameter of  $(12 \div 2) + 3$ , or 9 inches.

The letter making up the third part of the classification indicated the number of coupled wheels under the locomotive, as follows;

- "A" = special class of high speed geared locomotive with one pair of driving wheels. Also rack railroad locomotives.
- "B" = one pair of driving wheels.
- "C" = two pairs of coupled driving wheels.

- "D" = three pairs of coupled driving wheels.
- "E" = four pairs of coupled driving wheels.
- "F" = five pairs of coupled driving wheels.
- Double letters = articulated locomotives having more than one set of coupled driving wheels.

Thus our 10-12 D classification indicates a ten-wheeled locomotive with 9" diameter cylinders and three pairs of coupled driving wheels. However, this does not specifically identify the wheel layout as there is no obvious indication as to the location of the non-driven wheels. The full classification introduced additional 'digits' in the form of a fraction or fractions, as an example  $10-12^{1/4}$  D, to provide this additional information, as follows;

- A fraction such as 42/68 indicates a compound locomotive having two cylinders.
- A second fraction of 1/2, 1/3 or 1/4 gives the arrangement of the truck wheels.
- 1/3 designates a trailing truck only, 1/4 designates a leading and trailing truck.
- 1/2 denotes a locomotive with some special feature such as condensing equipment.
- Units with no fraction had only leading trucks.

Now we can see that, because the classification "10-12 D" includes no fraction, not only were the locomotives not compounds, but they also had only leading trucks, in other words the classification describes a 4-6-0 layout.

To demonstrate the operation of a fraction in the definition, the classification 10-12<sup>1</sup>/<sub>4</sub> D describes a 'simple', as opposed to 'compound', locomotive of 2-6-2 layout. The U.S. Army's equivalents to the WDLR 10-12 Ds were their 195 10-12<sup>1</sup>/<sub>4</sub> D class locomotives, three examples of which found their way onto U.K. narrow gauge metals, specifically the Penrhyn Railway as 'LLANDEGAI', 'FELIN-HEN' and 'TREGARTH' (ex-U.S. Army 5096, 5104 and 5159 respectively).

Having hopefully de-mystified the meat of the Baldwin classification system, we should further note that each individual locomotive was separately classified by adding a serial number at the end indicating its position in the build sequence. '590' was 10-12 D 396, i.e. the 396<sup>th</sup> locomotive of the class to be built and '794' was 10-12 D 150. Quite why '590' was a much later locomotive in the build sequence than '794' will become clear as we explore the story further.

### The 10-12 D Class - The Preliminaries

Through these notes I will quote from the actual Baldwin Specifications for these locomotives. Direct quotes from these specs will be in blue type where the original was typewritten and in red type where the original was handwritten. Date formats will vary throughout what follows but I have tried to reproduce the formats actually used at the time – it is fairly obvious that corrections were made by several different 'hands' and their representation of dates did vary. Note that, regardless of format, all dates are in the 'U.S.-style', i.e. 'month/day/year'. A trawl through Baldwin's records shows that in total 511 of the 10-12 D locomotives were built for France, specifically for use in French Morocco, and for the British War Mission. The vast majority of these, 495 of the 511, were delivered to the British for use by the WDLR, although 9 of these allegedly failed to arrive as they were 'lost at sea'. The final 20 of the locomotives ordered for the U.K. were ordered as boxed spares rather than as complete locomotives. We will be looking in more detail at Baldwin's specifications for these locomotives, but by way of an initial 'flavour' and apropos of these last 20 locomotives, Supplement no. 53 to the appropriate Specification reads:

TWENTY (20) LOCOMOTIVES (10-12 D 487 TO 506 ONLY) TOBE BOXED AND SHIPPED "BEST FOREIGN STYLE" TO BE USEDAS SPARES BY THE BRITISH WAR OFFICE.3.17.17

This Supplement is dated "3.17.17" which, in U.S. nomenclature, equates to the 17<sup>th</sup> March 1917. Note that the entry 'TWENTY (20)' was handwritten after the original 'TEN (10)' had been crossed out, although there must have been some sort of error as the entry '10-12 D 487 TO 506 ONLY' was never changed!

#### The Moroccan 10-12 D Locomotives

The first of the 10-12 D locomotives, 10-12 D l to 6, were built in response to a specification dated 1-28-15 ('Memorandum spec'n 10427'). The six locomotives carried Baldwin Works Numbers 41897 to 41902 and the Specification dictated the marking "C.M.M.O." (les Chemins de fer Militaires du Maroc Occidental) on the tank sides and the 'road numbers' "101 to 106". The customer was identified as "French Government, Morocco".

All of the 10-12 D locomotives were specified for a "GAUGE OF ROAD" of 1'  $115/_8$ ", although the handwritten annotation "60 CM" appeared on the first, and only on the first, of the 10-12 D specifications.

In appearance, these first 10-12 Ds were very 'American-looking' as can be seen in the maker's photograph showing the last of this first batch of 10-12 D locomotives. The owner's identity, the road number and the maker's number are all clearly visible in this image. Note the 'house' style and location of the Baldwin Maker's Plate. This was not to be a feature of the WDLR locomotives as a specifically different design and location of plate was requested with the British order(s).

In line with title of these notes, let us now consider in particular the Specification definition for Driving Wheels and Tires (sic) for these locomotives, comparing these with what we see in the image. The Specification reads:

Drivers, O.S. Diam. 23½" Cen. Diam. 20" Centers cast iron.

Tires, Steel (SUPP. 4) Held by {for HEREAFTER Shrinkage and shoulder}

Note; the words "Shrinkage and shoulder" were typed and the words "For HEREAFTER" were added in handwriting, along with the reference to Supplement No. 4, which reads:

Driving tires to be held by shrinkage and shoulder on main wheels and by shrinkage only on front and back wheels for 10-12 D 1 to 6 only.

Again, the bulk of the Supplement was typed but the words from "for 10-12..." were added in handwriting. The change in the tire spec was dated '2.24.15' and signed 'K.R.'.

If we read this specification carefully, we see that it had been the intention to fix the tires to the centres differently on the outer wheels than the centre 'main' wheels – simple shrinkage as opposed to shrinkage in conjunction with a shoulder. However, the handwritten changes to the spec make it clear that, as a late correction, it was decided to apply this standard to locomotives D 1 to 6 only, implying that any further locomotives would have shrinkage and shoulder fixing on all driving wheels. The significance of this type of correction will become clearer as we proceed. The Specification continues:

Tires, flanged, pos	n. Front an	d back		Size	1¾″ x 4½″
Tires, plain, posn.	Middle			Size	1¾″ x 5½″
Lateral play betwe	en driving	boxes and	wheel hubs	<sup>1</sup> / <sub>32</sub> ″	total.
Driving Boxes	Cast Iron				
Journals, Diam.	4″	Length	6″		

And then, in handwriting;

Tires to conform to Pechot tire section for 60 cm gauge, same as 8<sup>8</sup>/<sub>8</sub> CC 1 etc.

Reference back to our analysis of the Baldwin Classification system will tell us that this comment refers to the first and subsequent members of a class of 0-4-0-0-4-0 locomotives with two sets of cylinders of 7 inches in diameter. (280 of these locomotives were supplied to the French Government against specifications dated 2/1/1915 (1 to 100), 2/1/1916 (101 to 180) and 6/1/1916 (181 to 280). These specifications, for the articulated 'Pechot' locomotives, together with their associated contract agreements were particularly detailed, running to 100 pages or more.)

In line with the first 10-12 D Specification, the maker's photograph of No. 106 clearly shows flanged front and rear drivers with flange-less centre drivers.

In 1916, France ordered another 5 10-12 D locomotives, 10-12 D 7 to 11 ('Memorandum spec'n 11116' dated '7-11-16'). In common with normal Baldwin practice, this specification began with a general statement in the header that read;

DUP. 10 12 D 1 TO 6 WITH SAME EX-TRAS EXCEPT AS OTHERWISE SPECIFIED.



Maker's photographs of C.M.M.O. standard (left) and WDLR Standard (right) Baldwin Class 10-12 D locomotives,

'Dup.' is short for 'Duplicate'. In other words, most of their specifications presumed a previous specification whose details would read forward to cover new locomotives in the class. Obviously, this could not easily be the case with the first specification for a new class of locomotive.

The 'Drivers' and 'Tires' sections of this second specification were as for 10-12 D 1 to 6 but without any of the handwritten amendments, basically confirming that for these 5 locomotives the tires were fixed to the wheel centres by 'Shrinkage and Shoulder'. The handwritten entry regarding the tire profile has been typed in this later Specification, but the wording is identical. These 5 locomotives were delivered as C.M.M.O. Nos. 107 to 111 and were Baldwin works numbers 44178 to 44182. Note the big difference between the blocks of works numbers due to the comparatively long period between the two orders. As before, the locomotives went to Morocco.

Thus it was that when Britain started to cast the net for additional supplies of locomotives for the WDLR to augment their 'home-grown' equipment, Baldwin's 10-12 D Class of locomotives designed for the 60 cm gauge had been in production for some time and 11 locomotives had been, or were being, delivered to France.

Finally, through Specification No 18075 dated 12.4.18, France ordered a final five locomotives (D 507 to 511), Works Nos. 51569 to 51573, delivered as C.M.M.O. 112 to 116. The standard of these locomotives was much the same as their previous batch, C.M.M.O. 107 to 111.

#### The WDLR Locomotives (Batch 1 – 501 to 545).

Responding to Order DRT795, 'Memorandum Spec'n 11139', dated '8-18-16' covers locomotives '10 12 D 12 to 56' with the customer identified as 'British War Office' with the additional annotation 'For France'. The Specification starts with the phrase:

DUP. 10 12 D 7 TO 11 WITH SAME EXTRAS EXCEPT AS OTHERWISE SPECIFIED.

Supplement No. 7 to the Specification, however, summarises some potentially significant design changes to the WDLR locomotives when compared to their C.M.M.O. counterparts. The Supplement reads:

POSITIVE <u>LIMIT OF WEIGHT</u> ON DRIVERS 10<sup>1</sup>/₂ GROSS TONS FAIRLY EVENLY DISTRIBUTED. IF DESIRABLE SHORTEN AND WIDEN TANKS, KEEPING FORWARD POSITION, REDUCING WEIGHT ON DRIVERS AND INCREASING WEIGHT ON TRUCK. COAL AND WATER CAPACITY NOT TO BE CHANGED. TO EFFECT WEIGHT LIMIT AND DISTRIBUTION, MOVE SANDBOX 19" AHEAD, MOVE DOME 16" AHEAD, SHORTEN TANK 15" AT BACK, RE-

TAILING SAME WATER CAPACITY AS AT PRESENT BY INCREASING WIDTH OF TANK.

WEIGHT OF CAB TO BE REDUCED BY USING LIGHT FRONT AND ROOF, WITH HALF SIDES, EUROPEAN STYLE.

If the Maker's photographs of the C.M.M.O. and the WDLR standards of locomotive are compared it will be seen that these changes in overall layout were indeed introduced into the British locomotives. As specified, the WDLR locomotives weighed 2130 lbs less than their C.M.M.O. counterparts.

One of the fundamental problems with the 10-12 D design was the location of the large variable weight represented by the water tanks (476 U.S. gallons / 396.4 U.K. gallons / 3964 lbs). A

quick look at the photographs will show that much of this weight would have been carried by the front truck, thus unloading, relatively, the driving wheels. This set of changes between the D 1 to 11 and the D 12+ standards would only have served to throw even more weight onto the front truck. In fact, although the total weight was reduced by 2130 lbs, the weight on the front truck was increased by 350 lbs relative to the French locos, giving a total reduction in the weight on the drivers of 2480 lbs. Additionally, increasing the tank widths would have contributed to worsened lateral stability.

To return to our main topic of discussion here let us now look at the wheel and tire specifications for '10 12 D 12 to 56' which read;

Drivers,	O.S. diam. 2	3 <sup>1</sup> / <sub>2</sub> ″	Cen. Diam.	20",	CENTERS	CAST	IRON.
Tires	STEEL		Held by	SHRIN	KAGE and	SHOU	ILDER
Tires Fla	inged Posn.	All		Size	e 1³/₄″ x 3	<sup>1</sup> / <sub>2</sub> ″	
Tires Pla	ain Posn.	None	9				

This entry needs a little explanation here. The specification originally read All and None against the Flanged and Plain definitions, but these were crossed out to read Front and Back and Middle (Main) respectively. Against the Plain definition the size  $1^3/4'' \times 3^1/2''$  appeared. This correction was dated 10/3/16. However this was changed again on 10/18/16 when the Plain definition was crossed out and the original entries of All and None were re-entered by hand.

To sum up, as originally produced the specification was written around an all-flanged layout. However this was subsequently changed to remove the flanges from the centre drivers but within a few days this amendment was reversed to leave an all-flanged standard specified for these locomotives. Note that for the brief period that flange-less centre drivers were specified, they were to have been the same width as the flanged drivers at  $3^{1}/_{2}$ ". Note also that the flanged tires on the British locomotives were 1" narrower than on their French counterparts.

The specification continued:

Lateral play between wheel hubs and axle boxes (see sup. 19)

The bracketed entry was handwritten, presumably because all the supplements were numbered by hand after they had been typed – for some reason Supplements 27 to 30 appear not to have been generated as the numbered entries 'jump' straight from 26 to 31. Supplement 19, which was typed with no further amendment, reads:

LATERAL PLAY BETWEEN DRIVING BOXES AND WHEEL HUBS TO BE  $^{1}\!/_{32}''$  TOTAL FOR FRONT AND MIDDLE (MAIN) BOXES AND  $^{\prime}\!/_{2}''$  TOTAL FOR BACK BOXES.

To sum up, as specified the locomotives were to have flanges on all driving wheels and flexibility around tight curves was improved by providing increased lateral play on the rear set. Note that D 1 to 11, with flange-less centre drivers, had only 1/32" play on all driven axles.

Before moving on to the standards of 10-12 D 57 and beyond, in anticipation of the need to untangle the 'road numbers' of the locomotives we will look quickly at the 'finish' specifications for the first batch of WDLR Locos. The Painting definition in the specification read:

NONE

Painting:-Engine, Style ---- BLACK, DULL SURFACE, NO STRIPING Painting:- Tender, Style -----

501 to 545

Mark, None
OMIT FRONT NUMBER PLATE
Road Nos. Pos. Road Nos. Name

TANK SIDES

Anticipating comments that will be made in respect of the next specification, note that the road numbers were typed in this case. The 45 locomotives carried the Baldwin Works Nos. 44335 to 44339 (501 to 505) and 44351 to 44390 (506 to 545). The works plates were attached to the sides of the coal bunkers, rather than to the side tanks, on all WDLR Locomotives. Wheel details can clearly be seen in the maker's photograph of 10-12 D 13 (w.n. 44336) marked up as WDLR 502. We can also see the rather more 'British' cab design - referred to in Supplement 7 to the Specification - than was displayed on the Moroccan locomotives which presented a traditional American appearance. Also note the increased gap between the cab front and the back of the side tank and the position of the dome and sand box relative to the cab front and the chimney, in line with the comments in Specification Supplement No. 7 discussed above

## The WDLR Locomotives (Batch 2 – 701 to 1050 / Batch 3 – 1051 to 1150).

The War Office quickly followed DRT795 with another order, DRT887, this time for 350 locomotives. In response to this order, Baldwin generated a new specification, but using the same Specification Number (11139) as before. This spec was dated '10-3-16' and covered locomotives '10 12 D 57 to 406'. The WO ordered another 100 locomotives via Order LR10003 and the spec was amended to include locomotives 407 to 506 – this amendment was dated '11.6.16', just over one month after the date of the initial Specification. As with most Baldwin Specifications, this also started with a 'Duplicate' statement, this time reading:

### DUP. 10 12 D 12 TO 56, WITH SAME EXTRAS EXCEPT WHERE OTHERWISE SPECIFIED

There were design changes relative to the first batch incorporated in the later locomotives so before examining the wheels and tire specifications in more detail let us consider a few of these. One obvious visual difference was covered by Supplement 22 to the Specification, which read:

Protectors to be provided for cab windows, similar to Pe	chot
engines, for 10 12 D 61 and after.	12.4.16
Protectors to be shipped with later locomotives for appli	ica-
tion to 10 12 D 57 to 60, after delivery.	12.12.16

The dates were handwritten. Supplement 21 indicates another visual difference between the batches:

Hancock No.6 ejector or steam syphon and 30ft of  $2^{1}/2^{"}$  corrugated wire inserted suction hose, four ply throughout, and strainer. (See Sup. 46) Hose saddle or rack to be provided on back of coal box to carry hose.

Supplement 21 was dated with a handwritten '11/28/16' and the bracketed reference to Supplement 46, which specified the required performance of the water-lifting system, was also handwritten. Most of this Specification's Supplement numbers

were handwritten, but the numbers '21' and '22' were both typed. A number of other changes were identified in the Supplements. As examples: the engine frames were to be marked with reference centre-punch marks to aid alignment of axle boxes, on 10 12 D 80 and after (Supp. 7); a liner was to be applied under the dome for 10 12 D 101 and after (Supp. 35); a pressed steel mud pocket, or drum, was to applied directly below the position of the sandboxes on 10 12 D 101 and after (Supp. 36); the grate bar standard was changed for 10 12 D 173 to 184 and then again for D 185 and after (Supp. 37); the driving wheels were fitted without hub liners for 10 12 D 57 to 241, but brass hub liners were fitted for 242 and after (Supp. 38); provision was made for oiling engine truck boxes and swing links for 10 12 D 68 and after (Supp. 39).

Now let us look in particular detail at the wheel and tire section of the Specification. The Driver specification was as D 12 to 56:

**Drivers**, O.S. diam.  $23^{1}/_{2}^{"}$  Cen. diam.  $20^{"}$ , CENTERS CAST IRON.

However, the tire section was subjected to much crossing out and changes of entry, which I will try to summarise here. The original specification text was the same as for D 12 to 56, i.e.

Tires STEEL		Held by SHRINKAGE and SHOULDER
Tires Flanged Posn.	All	Size 1 <sup>3</sup> / <sub>4</sub> " x 3 <sup>1</sup> / <sub>2</sub> "
Tires Plain Posn.	None	

First, the SHRINKAGE and SHOULDER spec was amended, in handwriting, to read:

SHRINKAGE, SHOULDER AND THREE G27 SCREWS FOR 10 12 D 163 AND AFTER 11:25:16

However this was subsequently crossed out, on '12/8/16', so presumably the basic shrinkage and shoulder specification applied to all locomotives. As to the tire specification, the first line was altered to read:

```
\begin{array}{rll} \mbox{Tires Flanged Posn.} & \mbox{All} & \mbox{FOR 10 12 D 57 TO 160 ONLY} & \mbox{Size } 1^3/_4'' \times 3^1/_2'' \\ & \mbox{F \& B FOR 10 12 D 161 AND AFTER} \\ \mbox{Tires Plain Posn.} & \mbox{None} & \mbox{Middle for 10 12 D 181 and after} & \mbox{Size } 1^3/_4'' \times 4^1/_2'' \\ & \mbox{Middle for 10 12 D 161 to 180} & \mbox{1}^3/_4'' \times 3^1/_2'' \\ \end{array}
```

This summary appears neat and tidy but the actual Specification is a jumble of handwritten corrections often crossed out and replaced by later corrections. Each was accompanied by a 1916 date but these too have been crossed out so are difficult to read accurately. However, the last 'surviving' date attached to this saga is '1/2/17'. As the final step in establishing the specified standard appears to have been the recognition that 10 12 D 161 to 180 would have plain but narrow centre drivers, this date presumably refers to that last amendment. After the final standard was established, from '10 12 D 181', the tires on the WDLR locomotives, both flanged and plain, were still 1" narrower than those on the C.M.M.O. engines (see comments on the first batch of WDLR locomotives).

The Specification continued with:

Lateral play between wheel hubs and axle boxes (see sup. 32)

The typed wording was identical to the previous specification but the handwritten reference at the end this time pointed to Supplement No. 32, which read:

LATERAL PLAY BETWEEN DRIVING BOXES AND WHEEL HUBS TO BE <sup>1</sup>/<sub>32</sub>" TOTAL FOR FRONT AND MIDDLE (MAIN) BOXES AND ½" TOTAL FOR BACK BOXES.- FOR 10 12 D 57 TO 160 ONLY. LATERAL PLAY 1/32" TOTAL FOR ALL BOXES, FOR 161 & AFTER. All of the wording from "FOR 10 12 D 57 TO 160 ONLY" onwards was handwritten.

The next line in the Specification covering Driving Boxes is worthy of note. As for the first batch of locomotives, the Spec. originally read:

#### Driving Boxes CAST IRON

However, this was amended, in handwriting, with the following addition on the same line:

#### CAST STEEL FOR 10 12 D 242 & AFTER 12/8/16

To summarise, it would seem that the WDLR locomotives' design standard was 'fluid' in that numerous changes were introduced throughout their build programme. In respect of the wheel and tire definitions it would seem that 'uncertainty' regarding the required standard carried forward from the first into the later batches of production, a final standard not being achieved until after 180 locomotives had been built. It was not until the 161<sup>st</sup> locomotive that the centre driver flanges were removed from the as-built locomotive standard and the lateral play on the rear driven axle was adjusted accordingly. It

was not until the 181<sup>st</sup> locomotive that this change was finally accompanied by an increase in tire width relative to the front and rear drivers, a characteristic observed on all of the C.M.M.O. Locomotives.

Before moving on, we shall quickly look at the painting and numbering entries in this later specification. As to painting, nothing changed with respect to the first batch, however the numbering entry read:

Road Nos. Pos.	Road Nos.	Name	NONE
TANK SIDES	546 to 995		

The numbers were a handwritten addition dated '11/6/16'. However, these numbers were crossed out to be replaced with 701 to 1150 in another handwritten amendment dated '11/28/16'. When the Specification was first generated, unlike the first batch definition, the required road numbers were apparently not known and had to be added after the event. This addition was overturned within three weeks to produce the number sequence applied when the locomotives were actually delivered.

Locomotives supplied against Order DRT887 were produced in 8 sub-batches, and those supplied against LR10002 were produced in 3 sub-batches, as follows:

Class Serial No	WDLR No	Baldwin Works No		
DRT887				
D 57 to 62	701 to 706	44489 to 44494		
D 63 to 112	707 to 756	44507 to 44556		
D 113 to 137	757 to 781	44635 to 44659		
D 138 to 145	782 to 789	44681 to 44688		
D 146 to 245	790 to 889	44695 to 44794		
D 246 to 256	890 to 900	44891 to 44901		
D 257 to 356	901 to 1000	44938 to 45037		
D 357 to 406	1001 to 1050	45133 to 45182		
LR10002				
D 407 to 460	1051 to 1104	45183 to 45236		
D 461 to 470	1105 to 1114	45374 to 45383		
D 471 to 506	1115 to 1150	45398 to 45433		

During 1917, the WDLR re-numbered their later locomotives, intending that the block from 996 to 1150 were given the numbers 546 to 700, resulting in their then having a class of

locomotives with 'road numbers' running continuously from 501 to 995, as perhaps had originally been intended, but with the later batches of locomotives numbered in the middle of this sequence. Whether or not all of these numbers were actually applied remains a matter of conjecture as some sources note locomotives as still carrying their original numbers after the end of the War. The 9 locomotives 'lost at sea' would also complicate analysis in this area.

Prior to this renumbering there had been no locomotive 'number 590' - the Welsh Highland's loco was initially delivered as WDLR no. 1040 and was one of last dozen deliveries against Order no. DRT887 (10-12 D 396) and, being so late in the overall series, was delivered well after the final standard of these locos had been established and it would have incorporated all of the specific changes identified in this article so far. In particular, in light of the discussion that prompted these notes, it would have been delivered without flanges on  $4^{1/2}$ " wide centre driver tires. On the other hand, the Imperial War Museum's WDLR no. 794 (10-12 D 150) was delivered before many of the changes discussed were introduced and, most importantly, would have been delivered with flanges on its centre driving wheels as it preceded 10-12 D 160 which, according to Baldwin's own specification records, was the last locomotive so configured.

#### Discussion

Determining the specification and delivery standard of each of the locomotives is really only the first step in determining their detailed history. It is probable that many of the locos underwent change, possibly significant change, after arrival at the Front so simply because a locomotive was built with or without flanges on its centre driving wheels offers no guarantee that they would have stayed that way in service.

Whilst '590' was acquired by the Welsh Highland, after overhaul at Bagnall's in Stafford, shortly after the end of World War I, other members of the 10-12 D Class saw service elsewhere in the world, notably in India where 50 of the locomotives had been sent after the end of the War to work on the North West Frontier. A number of these were subsequently passed into industrial use, notably in the sugar industry. A few of these, including '794' were recovered after their service on the plantations ended and these locomotives might well have been subject to further change through their many years of operation after the end of World War I.

However, what we do know, from examination of photographs of '590' taken in the 1920s and 1930s and from physical examination of '794', is that the locomotives appear to have been (in the case of '590'), or to be (in the case of '794') at the standard that they were actually built. Whether this implies that neither locomotive experienced significant change, or that this is simply a coincidence may well be difficult, if not impossible, to prove after this length of time given the complex histories experienced by the locos, in particular by no. 794.

#### Acknowledgments

- DeGolyer Library, Southern Methodist University, Dallas, Texas, Mss 61.
- Lawson Little The Narrow Gauge Issue 179 'Over Here'
- Allan Baker Industrial Railway Record Issue 130 'Bagnall and the WDLR 2ft 0in Gauge Locomotives'
- Michael Bentley

## The North Wales Narrow Gauge Railways: As Pictorial an History as Possible. By John Keylock (Part 5)

**53.** At this juncture it is appropriate to consider how the bridge over the ravine at Glanrafon - styled Dingle Glen/Dell by the Victorians - was installed bearing in mind that the contractors did not benefit from modern lifting equipment.

The following suggested method of installation has been handed down from a former N.W.N.G.R. ganger, who claimed that the bridge was delivered in several sections by the makers/suppliers. These sections were carried from their works, over the L.N.W.R., to Dinas Junction.

From there they were transferred to narrow gauge wagons on the N.W.N.G.R. which was then in the course of construction and conveyed as far as Snowdon Ranger. The sections were transferred to horse and cart and taken up the road to Rhyd Ddu and thence down the contractor's track to Glanrafon Sidings where they were off loaded. Here they were riveted into their final form to make the two girders that exist today.

The builders would have had temporary lifting gear on either side of the river to lift stone to make the abutments of the bridge, but the lifting gear was not strong enough to take the full weight of each completed beam. Therefore the beams were assembled on a form of rollers and were joined together with temporary, but substantial plates, held in place with bolts to make one long gird-

er. Extra weights were placed on the extreme end of the beam on the Rhyd Ddu side, whilst the lifting gear on the Dinas side of the gorge was attached over the river, acting as a guide. The whole assembly was then slowly rolled across the ravine until one section was in place. When the Engineer was satisfied that it was in the correct position the beam was very gradually lowered until it was resting in its proper place.

Possibly the weighted end at the Rhyd Ddu side was gradually relieved of its

load, the second lifting gear taking the money in the bank by December weight. Once all was correctly aligned and the beam was supported underneath, the temporary joining pieces were dismantled.



Glanrafon 'Viaduct' looking up the valley of the Trewynydd J.I.C. Boyd 1966



The terminus at Rhyd Ddu (Snowdon) in near original condition, c.1894 (Hudson's Series)

The second girder was then raised above the level of the first and rolled on top of the first girder using the two lifting gears to act as guides. Once the crossing had been made, the second girder was moved sideways clear of the first and when in its correct position, lowered onto the bridge abutment.

54. In November 1879 Livesey (WHH 66, p. 9, para. 47) was promoted to the position of Manager and Secretary and the Company's offices moved from London to Dinas. With all Glanrafon's

unless agreements were broken - it is reasonable to assume that the bridge went in at the end of the year. This would have fulfilled the agreement requirement to have the line connected to the quarry's siding 'on or before 31st January 1880' (see Part 4, para. 52).

1880 would have been the last full year of railway construction, at last taking the line to Rhyd Ddu and thus passenger providing the with spectacular panoramas towards Llyn Quellyn.

In April a shareholder's meeting was held in Manchester. It was confirmed that an application had been made in the Chancery Division of the High Court (Vice Chancellor (Sir Charles) Hall again) to raise a further £50,000 by debentures 'to rid the railway of debt and to continue the line to its (proposed) terminus. £6,000 'A' debentures were to pay for rolling stock, £30,000 'B' debentures in

payment of existing debentures and to complete the line and £14,000 'C' debentures to cover other outstanding liabilities and for the general purposes of the Company. Additionally, an Agreement was made with the M.T.R.S.Co. for 'the hire and ultimate purchase (of 15 wagons) in place of rolling stock worn out or damaged at a total sum of £462.16.0 payable bv instalments over 6 years from 1st January 1881'.

In the August Russell added to his railway portfolio by being appointed Manager of the Manchester and Milford Railway - another line that failed to achieve its original aspirations! He subsequently became Receiver retaining the position until 1904\*

\*Footnote: For more on Russell's involvement with the Manchester and Milford see the book of that title by John Holden published by Oakwood Press in 2007.

## More Than Three Limericks

Solution of the publication of my first article on Three Stationmasters (*WHH* 56 p.2) my phone rang and a loud voice said "This is John Keylock, liked your article, well done, we always thought the man at

Waenfawr was John Hughes but if you say he is James I am sure you could be right. Now, could you look up some other people for us". He then proceeded to give me a list of names mentioned in the records as Stationmasters and mentioned in particular a man called Limerick who was in charge of Tryfan Junction at some point. I knew I had seen the name Limerick before and soon found the reference to Jeff Limerick, the ganger, in Boyd's list of employees in Spring 1922. In the back of my mind there is a third reference to a guard called Limerick who left the keys in Dinas and so had to break into Waenfawr Station to effect a staff change and legitimise his train movement on towards Rhvd Ddu.

I naturally followed up all John's names and found a particularly rich seam in the Limerick family. The origin of the name in the North West corner of Wales was, not surprisingly, an Irishman. He was called John Limerick and was born in Londonderry about 1835. I can find no record of him in Wales before 1858 when he married Catherine Jones aged 23 of Llanwnda. The death of James Limerick, their first child born 1858, was registered in 1860.

The first census record of him is in 1861 as a platelayer lodging in Eglws Rhos above Deganwy. His wife, Catherine, had been left behind at Tai Llan, Llanwnda. Tai Llan appears from the census to be next door to Saron Chapel but, given the similarity of the names of their later dwellings and the internal evidence of disorganisation in this census return, might have been near the parish church.

In the next ten years they had four more children, Elizabeth in 1861, Jeffrey in 1864, Margaret in 1868 and another Jeffrey in 1870. There was no confusion of names because the first Jeffrey had not survived his first year of life. Their christenings are all recorded at Llanwnda.

### Dave Rogerson investigates another family of NWNGR employees.

In 1871 the family are together at Pentre Llan, John declared his profession as Railway Platelayer. Pentre Llan was over the newly built bridge at Dinas just beyond St Gwyndaf's Church on the way to Plas Llanwnda.

A final child, Thomas, was born to John and Catherine in 1874. John then suffered the tragedy of losing his wife when Catherine died in 1876. Elizabeth was by then 15 years of age and could probably help him by taking some responsibility for her 8, 6 and 2 year old siblings. This was, of course, just at the time when local plate laying work should have been available but in the 1881 census John is registered as a labourer.

He had remarried in 1880 a local girl called Ellin Williams with whom he had produced a daughter Jane in 1879. Elizabeth had left home to enter service with a ship broker in Llanbeblig, Margaret was living with grandma in Llanwnda but the two youngest children Jeb and Tom were still at home. The cottage name is difficult to read but the home is still in the same area across Dinas bridge.

Quite a lot happened in the next ten years. John and Ellen had two more children but neither survived infancy, Elizabeth married a mariner from Llanbeblig where she had been in service and Jeffrey married Mary Ellen Roberts who was born in Penygroes. More importantly for us John had regained his status as a platelayer.

In 1891 John and Ellen with the growing children Thomas and Jane were still just over the bridge at one of the cottages called Ty'n Llan which is the modern name for the area in which they had always lived. Jeffrey, Mary and their 5 month old son John were living at Church Cottages in the same row as driver Hugh and his son fireman Willie Hugh Williams. At this time, as I have already noted, John was a platelayer whilst Jeffrey had his job recorded as load wagoner. Another hand has appended "horse" to this entry but I wonder whether it should actually read

wagon loader and that he was working at Dinas Yard. Thomas was a railway labourer but unfortunately none of them specified for whom they are working.

During the next ten years the original John died but the family continued to grow. Griffith Limerick was born in 1892 and died a year later. Jeffery and Mary had a son whom they called Thomas after his brother, a daughter Catherine named after his mother and a son they named Jeffery. The names started to get repetitive as Thomas, the brother, married Sarah Ann Williams of Penygroes and they called their first child Catherine and their second John after his grandfather who had died in 1897. This John died in infancy. The existence of two Catherine Limericks both born in 1897 in Llanwnda must have been particularly confusing, they seem to have distinguished them by calling one Kate and the other Katy.

Fortunately this confusion was resolved about 1900 as Thomas took his family away from North Wales to work in the coalfields of Pontypool.

With the death of John, the move of his widow to live with her daughter Jane who had just married Ebenezer Jones of Llanrug and Thomas's departure to Monmouthshire, the situation in Llanwnda in 1901 had simplified to just Jeffrey's family. Jeffrey, Mary and their children John, Thomas, Catherine and Jeffrey were living at what looks like Lawrynys, a group of ten cottages around the Maltsters Arms which I believe was in Bontnewydd. Most importantly Jeffrey had now taken on his father's role as Railway Platelayer.

Four more children were born to the couple in the next ten years. Robert Owen, Evan, William and Jane and by 1911 the family had started to leave home. The eldest, John aged 20, had joined his uncle in Pontypool. The next, Thomas aged 16, was lodging in Waenfawr and recorded his job as

"porthur" presumably at the station. Kate, aged 14, was working at the Newboro Arms, the four voungest were at home at No 1 Bethsaida Terrace, Bontnewydd, again just along from the Maltsters Arms. Most importantly for our purposes Jeffery recorded his profession as Railway Plate Layer, NWNGR.

It is highly probable that John senior, his sons Jeffrey and Thomas, and Jeffrey's son Thomas all worked at some point for the NWNGR. There are hints that Jeffrey's eldest, John, came back to the area later – he may well have been the

Coal Merchant whose problems with a weighing machine at Rhyd Ddu were reported in Issue 18 of this Journal. It is highly probable that some of Robert Owen, Evan and William, the younger sons, also stayed around. Any of these may have worked for the WHR: a close study of both companies' records might reveal more detail. However, as a consequence of the stimulus provided by John Keylock, I hope I have been able to provide some background which will help to make sense of the record.

Finally a word of warning to whoever follows after. Throughout this article I

have simplified the names. Limerick was a difficult and unusual name to pronounce and spell by local welsh speakers. Thus Limerick, Lamerick, Lambrick, Lamrick, Lamerich, Launck, Limerck, Lenniuck, Samerick and Lamrich are all versions found in official papers such as Censuses and Birth, Marriage, and Death Records. Similarly any phonetic approximation to the Christian name was used. Today there appear to be five descendent families living in Caernarfon with entries in the phone book

#### **Dave Rogerson**

### **Continued from Page 12**

remained a family concern for 70 years after his death. The business was sold in 1968 and closed in 1971. However, the photographic archive was, Frith thankfully, preserved and a new company, The Francis Frith Collection was launched in 1975.

(see http://www.francisfrith.com/uk/

Coincidentally, perhaps, Frith also adopted a basic 5-digit photographic reference number system but with letter extensions where an enlargement or a tinted version of an original negative might separately be marketed, or to indicate where an additional negative might be filed 'out of sequence' along with other images of the same location. An example of this would be 67694A, a photograph of their 1914-1918 War Memorial to be found amongst a series of 1914 views of Ross on Wye. The original 67694 is a view of the ferry on the River Wye.

However, the fundamental difference between the Frith and the Real/LPC systems is that the former is essentially chronological with no attempt to indicate the location or the nature of the image. The first two digits in a Frith image reference, at least pre-World War 2, indicate the image's date, although not directly as in some years the archive grew far more rapidly than in others. As an indication, but not an exhaustive indication, of this correlation, I have noted the first image reference in each of a selected range of 8 calendar years;

1919 - 68797	1923 - 73333
1920 - 69352	1924 - 75196
1921 - 69919	1925 - 76668
1922 - 71722	1926 - 79006

1925 was by far the most prolific year in The reference number for this image in this sequence with almost 2500 images added. The reference number formats for 1925 images are 76xxx, 77xxx, 78xxx and 79xxx. The number summary above will show that some of the 76xxx numbers, i.e. before 76668, refer to 1924 images and virtually all of the 79xxx numbers refer to 1926 images. However, any Frith photograph with a reference number starting with either 77 or 78 can reliably be dated to 1925.

Frith's photographers did visit the Festiniog and Welsh Highland in 1925 and the Archive contains a block of images numbered from 77826 to 77849 taken during this visit. Of these, 77829 to 77849 were views either of the Welsh Highland or of its immediate environment. а number e.g. of photographs taken in and around Beddgelert and the Aberglaslyn Pass.

Now for a significant coincidence. Note Casserley's numbers for FR and WHR images - 77700 to 77869 - and the Frith references for their 1925 photographs - 77826 to 77849!! One set of numbers identifies the railway whereas the other set unambiguously identifies the date. Care is needed to avoid jumping to incorrect conclusions based simply on a photograph's reference number!

Turning now to the main subject of these notes, the photograph on page 12 is one of Frith's images which has been published several times before. On a couple of these occasions the authors did not suggest a date for the photograph, but in other cases captions to this image have suggested dates of 'the 1920's' and, in one case, '1931'.

Frith's system is 36551 which, because of the way the Frith system works, tells us that the date of this image is actually 1895. The year 1895 is covered by reference numbers in the ranges 35xxx, 36xxx and 37xxx. This possibly extends into the 34xxx range but the archive accessible is currently around the 1894/1895 incomplete transition area. As The Frith Collection continue the process of generating their electronic archive, gaps such as will progressively disappear. these However, what we can say with some certainty is that any Frith photograph in the 36xxx series will be datable to 1895, bearing in mind possible rare exceptions as noted above.

The picture shows a relatively new and 'clean looking' track bed which perhaps led some to conclude that the image dated from the 1922 refurbishment prior to the re-opening of passenger services to South Snowdon. How can we explain this new appearance of the track bed had the picture been taken in 1895? In the middle 1890s the area around 'Snowdon' did undergo considerable development. Prior to that period there had, for example, been no run around loop at the terminus and the original track had been laid on split-log sleepers. The station layout was developed to include a run around loop, the station building was extended to cover the gap where the lever frame was located (between this and the adjacent building) and a program of sleeper replacement was undertaken. It would not be surprising if a photograph taken at that time showed what appeared to be relatively new track running into the 'Snowdon' station area.

## From the Editor

#### Letters

### **Crossing Portmadoc (WHH 67** page 4)

Sir

Thanks to Richard Watson for making available this item from the Fox archive.

I suspect that the point H. J. Jack was making, and which puzzled Richard in his third paragraph, was that the section between Harbour station and "the bridge" (Jack doubtless meant the point where the Croesor & Portmadoc - latterly P.B..&.S.S. - crossed High Street and joined the F.R. tracks on to the quays) was Festiniog statutory railway and therefore should be in its Order, while the remainder of the route through the town (including the revised junction across High Street which would enable W.H.R. trains to run direct to Harbour station instead of being able only to run to the slate quays) was the

C&P's statutory railway and therefore should be in the W.H.R. Order. This may be clearer from W.H.H. 47 page 10 first column and from Jim Lloyd's plan in James Boyd's Festiniog Railway Vol. 1 (1975) page 197.

What is, perhaps, curious is that this list of adjacent owners should have been called for: it wasn't as though it was needed for a "Book of reference", for no land or wayleave acquisition was involved - all the land was already in the railway companies' ownerships, apart from the two items listed as Festiniog Railway - the new Britannia bridge and the new connection across High Street. So was it merely so that adjacent landowners could be served with notice of the L.R.O. application? And isn't that the sort of task one would have expected the companies' legal representatives (step forward Evan R Davies) to be undertaking?

As an aside, "Mr Freeman" was obviously Ralph Freeman (27 November 1880 - 11 March 1950; from 1947 Sir Ralph), credited with the design of (inter alia) the Sydney Harbour Bridge (1932). In 1938 he became a senior partner in Sir Douglas Fox & Partners, and the firm then became Freeman, Fox & Partners (eventually finding its way into Hyder Consulting Ltd, with whose kind permission items from the Fox archive are reproduced). For fuller background, see Sir Ralph's obituary in The Engineer, 17 March 1950, page 334 (available on-line at Ref. 1).

I would, however, be very interested to learn more of J K Prendergast, who seems to have served as the "local agent" of Sir Douglas Fox & Partners for their consulting and supervision work on the Welsh Highland project, which seems to have been treated by them as an offshoot of their Dolgarrog out-base.

Sincerely

**Richard Maund** 

#### **Reference:**

1) http://www.gracesguide.co.uk/images/e/e1/Er19500317.pdf

### Wheeller's Day -An Anniversary.

On August 8th 2015 it was exactly 80 years since Hubert Wheeller and his friend Bill Minnion visited the Welsh Highland Railway as part of their twoweek holiday itinerary in the summer of 1935.

During this holiday they visited many railways then perceived to be under threat, travelling from their homes in London to Shrewsbury, Blaenau Ffestiniog. Portmadoc, Towyn, Machynlleth, Aberystwyth, Swansea, Lynton, Barnstaple and back to London.

Wheeller was a prolific photographer and his visit to the Welsh Highland has left us with nearly 60 photographs - to which we can add 15 taken by Bill Minnion which, as a collection, are immensely informative regarding the railway and its operation on one day in the post-lease period of the mid 1930's.

The Journey made by Hubert and Bill in 1935 is described in the Heritage Group Publication Wheeller's Day which includes not just a summary account of



Hubert Wheeller (left) and Bill Minnion in a slate mine entrance at Blaenau Ffestiniog on the day before their 'epic' journey on the Welsh Highland. From Blaenau the pair

travelled on the Festiniog Railway to Portmadoc where they stayed overnight before their return journey to Dinas on the Welsh Highland. Their journey on the 8th of August was a combination of train rides and side excursions that would only have been possible on a Thursday in August that year. Wheeller was a methodical planner and his visit to the WHR on that particular day in 1935 was no simple coincidence!

their fortnight's holiday but, in Wheeller on August 8th and the morning conjunction with a detailed description of the 9th together with a selection of of their journey on the Welsh Highland, reproduces virtually all of the photographs of the Railway taken by

those taken by Bill Minnion.

On the 8th we raised a glass to the memory of the two intrepid travellers!

## Peter Liddell's Photo Analysis



n my article in *WHH* Iss.67, I noted a range of Locomotive Publishing Company photographs, identifying these by their LPC reference numbers and by the numbers that they later carried when they were marketed Photographs. through Real With hindsight, I think this story warrants a little better explanation together with comments on the usefulness of such numbers reference as aids to photographic analysis.

The Locomotive Publishing Company was established in 1900 and it pioneered the commercial marketing of railway photographs. The business grew through the early decades of the 20th century and numerous photographers provided negatives to the growing LPC collection. Whilst reference numbers were allocated to these images, the system adopted to manage this process was far from consistent and whereas 'blocks' of images can be identified from these numbers they offer no clue as to the chronologies involved. For example, the group of photographs discussed in Issue 67 had LPC reference numbers running from 1655 to 1663 covering both FR (1655 to 1658) and WHR (1659 to 1663) subjects. These images were

made in 1927 and, as an indication of reference anomalies, LPC numbers in the 5000 and 6000 range can be found on images from 1900 to 1910.

After LPC and their negatives had been acquired by Ian Allan in 1951, Henry Casserley undertook а complete re-cataloguing of what he described as 'the chaotic' LPC reference system. In Casserley's new system, blocks of images were arranged by Pre-Grouping and Independent Railway Companies. He allocated numbers in the range from 14000 to 89000 - he started from 14000 to avoid confusion with any pre-existing LPC numbers. For our purposes here, we should note that he established the group 77700 to 77869 for photographs of the Festiniog and 77870 to 77899 for the Welsh Highland and its predecessor the NWNGR. The Festiniog block followed the Tal-y-Llyn (77400 to 77499) and the Corris (77500 to 77599). It would appear that he had planned to cover the Vale of Rheidol and the Welshpool and Llanfair between 77600 and 77699, but in the event these images were incorporated into his GWR block. The WHR block was followed by the Eskdale Railway (77900 to 77999) and

general miniature railways (78000 to 78099).

Whilst no doubt more logical than the original LPC system, these numbers actually tell us nothing about the photographs other than the identity of the railway involved which, presumably, should be apparent from the images anyway. However, as a means of finding images showing a particular subject this would have been a huge improvement. The blocks of numbers allocated also give a clue as to just how many images of particular railways LPC actually had, or which Ian Allan expected to receive! When, in the late 1960's arrangements were finally made whereby Real Photographs would market the Ian Allan owned LPC Images (Real had originally made approaches to Ian Allan at the time of their LPC take-over) these 'Casserley' numbers naturally carried over as Real reference numbers.

Another name that features significantly in the study of Welsh Highland photographs is Francis Frith. Frith (1822–1898) opened his photographic business in 1859 – the first specialist photographic publisher. His business

#### **Continued on Page 10**

Editor:	Peter Liddell	E-mail	peter.liddell@welshhighlandheritage.co.uk
Secretary:	Cedric Lodge	E-mail	cedric.lodge@welshhighlandheritage.co.uk
Membership Secretary:	Derek Lystor, 14 7	Feign Villa	ge, Bovey Tracey, NEWTON ABBOT, TQ13 9QJ Telephone 01626 853963
		E-mail	dick.lystor@welshhighlandheritage.co.uk