

ON SHED

The Journal of the 8D Association

Volume 11, Number 2 : June 2021



'On Shed' : Journal of the 8D Association

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From the Editor

As the country begins to open up after some 15 months of lockdowns, social distancing and self isolating, it's hoped that opportunities to meet up with fellow rail enthusiasts are now not too far away. Certainly, it would be nice to think that the September edition of 'On Shed' will include details of an autumn and winter programme of events.

This edition of 'On Shed' contains what I hope you agree is an interesting variety of material. From shunting duties in the glassworks, to an explanation of 25Kv overhead power supply - and all stops in between. I hope that you find something of interest.

As ever, I am grateful to those colleagues who have contributed material for this edition, and I hope that others may decide to submit material for future editions of the Association's journal.

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Gordon Hill

The death has been announced of 8D member Gordon Hill. Gordon passed away aged 92 years on 29 April 2021 at Warrington Hospital.

Although not a railwayman himself, Gordon came from a railway background. His father and grandfather were railwaymen, the latter employed as a signaller on the Cheshire Lines.

At the time of preparing this journal, it is understood that a family funeral service will be held at Penketh Methodist Church at 11.00am on Friday 21st May, followed by committal at Widnes Crematorium at 12 noon.

A regular attender at 8D meetings and events, Gordon will be missed by his many friends and colleagues.

Cover : Mold Junction allocated Stanier Class 5, 4-6-0 44917 awaits servicing on Chester Midland shed, having brought a stopping passenger train into Chester General. The locomotive having previously been at Birkenhead Mollington Street in 1958, arrived at Mold Junction on 20 June 1959, remaining there until the shed closed on 18 April 1966. It was eventually withdrawn from Speke Junction on 11 November 1967 and sent for scrap.

Photo : 8D (John Kirwood) Collection

News Round Up

Chris Hollins

Given that 'On Shed' is published quarterly, many of the items referred to in this 'News Round Up' can only be of historical interest. Nevertheless, every effort has been made to record also those changes, developments and items of interest that have occurred within the 8D area since the date that the last publication was prepared for the printer.

Unusual Workings

In the early hours of Monday 8th February, Network Rail operated eight engineering trains between the Merseyrail Platform 5 at Liverpool South Parkway and Crewe Basford Hall via the CLC route through Widnes, Warrington Central and Manchester Piccadilly. They departed Liverpool South Parkway at half-hourly intervals from 01.30 to 05.00 with GBRF providing the power for six of the trains. The GBRF locomotives utilised were 66702 'Blue Lightning', 66720, 66726 'Sheffield Wednesday', 66742 'Port of Immingham Centenary 1912-2012', 66758 'The

Pavior' and 66777 'Annette'. The two other trains used diesels from another train operating company. When was the last time that eight locomotives operated along the CLC route on a single day?

Aventra Class 730

On Tuesday 16th and Thursday 25th March, West Midlands Railway's new Bombardier Aventra Class 730, 3-car EMU'S, were used on mileage accumulation trips between Crewe and Liverpool Lime Street. Thirty six of these units are being built for use on the Birmingham Cross City line from Redditch and



Above : On Thursday 25 March, a new West Midlands Railway Bombardier Aventra Class 730, 3 car EMU crosses Ditton Viaduct, forming 5N14, the 14.49 Crewe Down Refuge Sidings to Liverpool Lime Street mileage accumulation train, the first of two round trips between Crewe and Liverpool. **Photo** : Chris Hollins

Bromsgrove to Lichfield. Forty five similar 5-car units are being built for the London Northwestern Railway branded services which include Birmingham to Liverpool.

Light Engine Move

On Wednesday 24th March, GBRF Class 66 66724 'Drax Power Station' made an interesting light engine move along the Halton Curve, when it operated as 0F42 17.43 Hanson Cement Works at Penyffordd to Edge Hill Tuebrook Sidings. It was routed via reversal at Croes Newydd through Wrexham, Chester and Runcorn.

Network Rail Test Train

Later, on the same day a Network Rail test train running as 3C23 20.55 Crewe Carriage Sidings to Manchester Longsight Depot, made trips over the Halton Curve, the Low Level line and the Bootle Branch. From Crewe, the train ran via Chester, Runcorn, Ditton Jct, Arpley Jct, Ditton Jct then back to Arpley Jct and then via Warrington Bank Quay, Bamfurlong Jct, St Helens Central, Edge Lane Jct to Bootle Jct. It returned from there via St Helens Central, Bamfurlong Jct, Parkside Jct and Manchester Piccadilly.

Kirkby Train Derailment

On Saturday 13th March, 2K38 the 18.35 Liverpool Central to Kirkby Merseyrail service operated by units 507.006 & 507.021 failed to stop in the platform, and after demolishing the buffer stops came to a stand with the leading Driving Motor Second open wedged under the Glover's Brow Road Bridge, adjacent to the Wigan line platform.

Twelve passengers and two train crew were on the service, although fortunately nobody was injured.

The undamaged unit 507.021 was removed under its own power back to Kirkdale depot the following day, while 507.006 having had its derailed carriage re-railed and placed on

wheel skates, was removed also to Kirkdale Depot at slow speed by Rail Operations Group Class 37 37800 which had been brought from Leicester as it is fitted with a tightlock coupler, enabling it to haul the unit without having to use a translator vehicle. With the impending introduction of the new Class 777 EMUs into service, it is unlikely that either of these two units will be used in service again and will probably be withdrawn.

Merseyrail Service Extension

The Government's 'Transforming Cities Fund' has allocated £66 million towards the extension of the Merseyrail Electrics network from Kirkby to a new station at Headbolt Lane in the Tower Hill area of Kirkby.

The Station will have three platforms, two of which are for the electric services, with the third one being used by Northern's diesel operated service from Manchester Victoria and beyond which will terminate there. A mile of new double track from Kirkby along with third rail electrification is expected to be installed with the station opening in 2023.

It is hoped that by then a decision will have been made about extending the electric services plus the Northern Diesel service from Manchester, along a newly built line to Skelmersdale.

Liverpool to Leeds High Speed Line

It has been confirmed that the Low Level line through Fiddlers Ferry is being considered for upgrade as part of the Northern Powerhouse proposed high speed line from Liverpool to Leeds. An alternative proposal put forward by an engineering company under the name Trans Britain Railway is also keen to utilise the Low Level line as part of their alternative plan for a new line across the Pennines. A new 'through' low-level station at Warrington Bank Quay would be built. This also features in the Northern Powerhouse plan, which includes a tunnel underneath the town.

Most Unusual Working of the Year

On Monday the 12th of April, GBRF operated an unusual stock working from Eastleigh Traction and Rolling Stock Depot to the Widnes Alstom Transport Technical Centre.

The train was top and tailed by GBRF Class 66 diesels 66748 *West Burton 50* & 66788 *Locomotion 15* along with 6 Barrier vehicles and South Western Railway Bombardier built 10 car Arterio Electric Multiple Unit 701.005. The purpose of the working was unknown.

Alstom Refurbishment Contract

The following day, Porterbrook Leasing announced that Alstom had been awarded a £25 Million contract to refurbish 28 of the 36 strong South Western Railway Class 458, 5 car Juniper sets.

The Refurbishment which will be done at the Widnes Site includes reducing the units to 4 cars as well as interior and electrical upgrades.

When completed, they will be allocated to Bournemouth Depot and used on the London Waterloo to Portsmouth service as well as selected Waterloo to Bournemouth services. They will replace the recently refurbished Class 442 Wessex Electrics, which will now be scrapped.

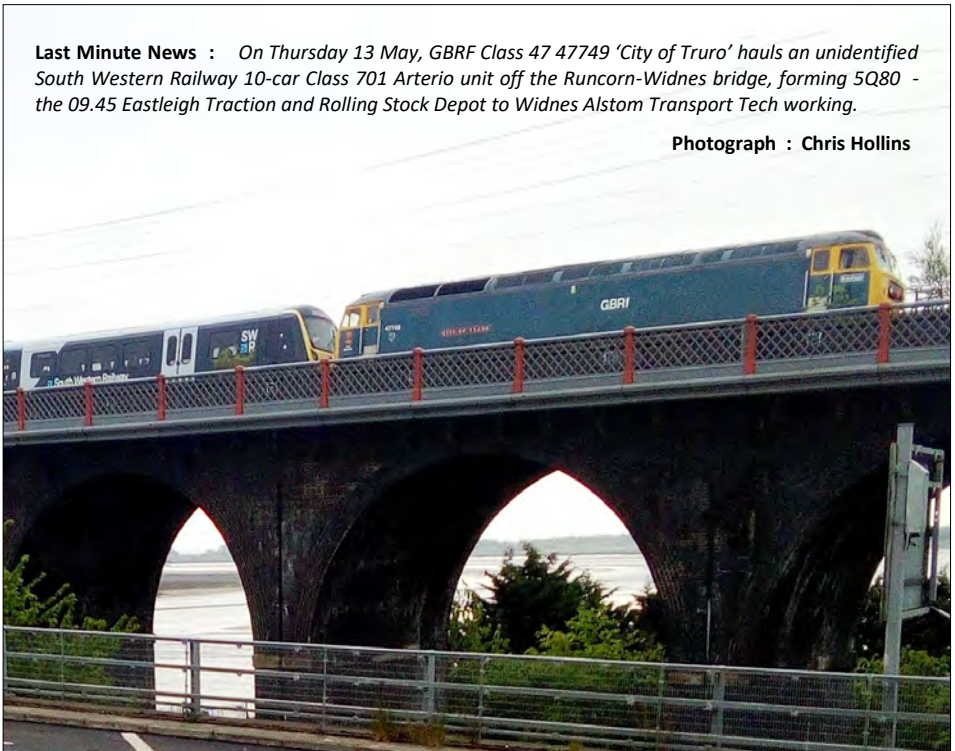
New Freight Flow

GBRF has won a contract to haul aggregate from Shap Quarry to Tuebrook Sidings at Edge Hill. The twice weekly service of 1800 ton trains will be unloaded on former railway sidings land at Edge Hill.

Chris Hollins

Last Minute News : *On Thursday 13 May, GBRF Class 47 47749 'City of Truro' hauls an unidentified South Western Railway 10-car Class 701 Arterio unit off the Runcorn-Widnes bridge, forming 5Q80 - the 09.45 Eastleigh Traction and Rolling Stock Depot to Widnes Alstom Transport Tech working.*

Photograph : Chris Hollins



Ravenhead Memories

Rod Dixon

Driving into St Helens on the Linkway it is hard to remember where the various glass works, factories, colliery and the Ravenhead sidings were. Reading an item and seeing some old photographs of the sidings in St Helens back in the day brought back some memories of my times as a fireman on the shunt engines in the yards in the fifties and early sixties.

Foreman, Shunter and 'Jinty' on Standby

The Ravenhead Junction signal box gave access to the sidings via two lines that passed the 'Black Cabin'. As the name implies, it was a small 12ft x 8ft dingy brick built building just west of Ravenhead Jct. box. There was a foreman, a shunter and a shunt loco (usually an 0-6-0 Midland side tank 'Jinty') rostered there 24 hours a day Monday to Friday with a 10pm finish on Saturday night. The foreman and the signalman kept in close contact as to any movements required.

Between the Black Cabin and the next control point - Canal Bridge Cabin (about a quarter of a mile west) - there were three lines called 'New Road', 'Branch Line' and 'Goods Line'. New Road and Branch Line served as reception lines with the Goods Line usually left clear to be used as a running and departure line. An Inspector at the Canal Bridge Cabin controlled movements by means of small semaphore signals that were mounted on a gantry over the three lines at his end of the sidings. These were operated by the Canal Bridge shunter on the instructions of the Inspector. Unofficially, the shunters would use these signals to control the shunts by pulling the signals off to ease the couplings then putting the signal back to stop the shunt. The uncoupled wagons would roll down a small hump. The loco used for these

shunts was the Black Cabin one, or the Canal Bridge one (another 0-6-0 Jinty). Both were on a similar roster.

Gas, Glass and Colliery Working

At the time, these locos were kept very busy. The Black Cabin Jinty handled traffic for the UGB glass works sidings which led off Branch Line outside the Black Cabin. It also dealt with the Gas Works sidings which led off the main line behind Ravenhead Jct Box, and traffic that was for St Helens and the North. The latter was taken via a ground frame at Peasley giving access to a single line for Pocket Nook Branch. This traffic was put on to the branch, to be taken off the other end by the shunt engine based at the St Helens Sidings.

The Canal Bridge engine shared the shunting of the arriving trains with the Black Cabin loco. Together, they put traffic into various Pilkington's sidings that led off one of the through lines that went to what was known as 'Top End'. If my memory is right, there were five other lines that came away from the Canal Bridge towards the Top End. Those lines that came together to form loops into a single line about half a mile away. That line was under the control of a signal box and level crossing called Marshes Crossing. There were also three or four sidings leading away from the Canal Bridge that went into Ravenhead Colliery where empty wagons were needed, and then retuned loaded.

Ancient Motive Power

For movements that were going beyond the Canal Bridge sidings towards the Top End, the Inspector would inform the Signalman at Marshes Crossing that he wanted a trip making. The shunt engines that were usually ros-

tered to this work were some of the oldest locos in the fleet. In 1897, they had been converted by the Lancashire & Yorkshire Railway from a tender engine into a 0-6-0 saddle tank. Five of these saddle tanks were allocated to Sutton Oak. Although they were very old, three were rostered to work at the Top End for 16 hours a day !

First Trip of The Day

The first trips of the day shift usually needed two of the saddle tanks coupled together with a guards brake van on the rear of the trip which could be up to 25 wagons long. The guards van was needed for two shunters to ride with the trips and also to assist in descending the gradient towards Marshes Crossing. When all was ready, the two locos would propel the train out of the sidings onto the single line picking up the 'Staff' at the signal box, over the level crossing onto a 1 in 75 gradient towards Menzies Siding which was about 3/4 of a mile further on. A shunter stationed at the Menzies Ground Frame worked the points and a semaphore signal

giving access to UGB, (Nuttalls) and Pilkington's Fibreglass Works.

No Gates - Just a Red Flag !

A further level crossing between the Ground Frame and Pilkington's Fibreglass site had no gates provided but Pilkington's did provide a flagman to protect the crossing. He carried a red flag to stop the road users and there was a type of semaphore which he lowered to allow the train to be propelled into the factory where the two locos and brake van were detached to return to Canal Bridge to possibly do two or three more runs using the two engines. When all the traffic had been delivered (this was about 12 o'clock), one of the locos was detached to go to Sutton Oak Shed to be serviced. One of the reasons for this was when these locos were modified into tank ones they were fitted with a small coal bunker which needed refilling more often than the later built Jinty type Loco.

After this loco had been serviced it was stabled at the depot, ready for going back to Ravenhead at 6 o'clock in the evening relieving

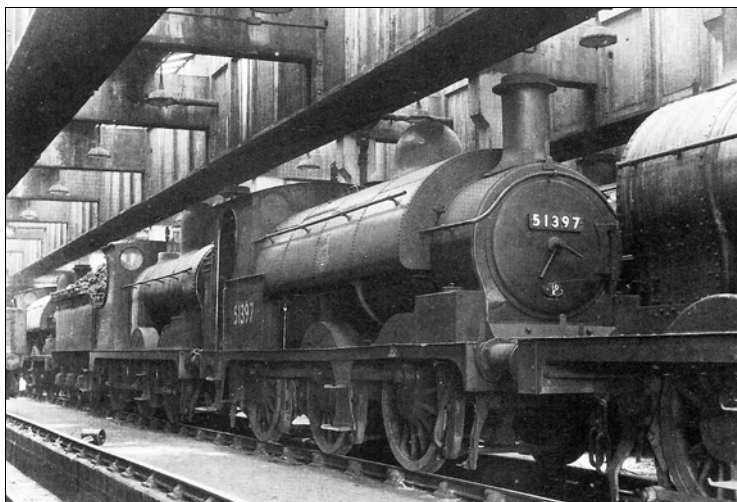
the loco that had been left there. That one could then go to the depot. The single loco and brake van that remained at Ravenhead was diagrammed to trip up the Eccleston Branch. This was a right hand fork just after the Marshes level crossing and was controlled by a 'Staff' and a semaphore signal. Movements were again propelled with a limit of 15 wagons into Pilkington's crate yard (about half a mile from Marshes crossing), the coal-fired Corporation Electricity Works, which until the mid fifties supplied DC electricity to



Above : Marsh's Crossing signalbox in St Helens on the line from Ravenhead Jct., controlling access to United Glass Peasley Works and the remains of the former Eccleston Branch still open to the Triplex Glass Works which closed on 10 October 1967

Photo : Rod Dixon Collection

the St Helens Trolley Bus system, (one mile away) and Pilkington's Triplex Glass Works (three miles away). There were no means of 'running round' vehicles at any of these premises, so all the movements on the branch were propelled with the brake van serving as a rider for the shunters who accompanied the trips.



Aspinall built former Lancashire and Yorkshire Railway 0-6-0ST 51397, rests between duties inside Sutton Oak shed.
Photo : Rod Dixon Collection

Although very old, the saddle tank locos were good for working at the Top End because the Driver's position was on the left side of the cab. The loco was 'boiler first' going up the gradients and this meant that the water in the boiler covered the top of the firebox. Given that the coal bunker was small, working the engine hard on the gradient used the coal quickly ! The day turn train crew of the Top End was relieved at about 1 pm, with the afternoon crew rostered to work the Ecclestone Branch and pick up all the loaded traffic from Fibreglass and return sand and coal empties from Nuttalls, making it a very busy shift. Accordingly, this meant there was a problem with the coal !

Coaling Problem Solved

The problem was resolved by a Sutton Oak shed man being rostered to go to Marshes Crossing, where there was a spur line going to a small foundry. On this line, just clear of the running line, was a wagon of loco coal provided so that the shed man could shovel coal across to top up the loco's coal bunker. This avoided the necessity for the loco to go to

Sutton Oak shed until the end of shift. If there was no shed man available, it was down to the fireman to get his own coal - not a welcome addition to his other duties but sometimes if the driver was young enough he would help out.

One day, as a passed cleaner, I was rostered fireman on the afternoon Top End shunt and as there was no shed man to coal the loco it was down to me to deal with the coaling. The method was to put the engine's bunker as close as possible to the siding where the coal wagon was stabled, drop the wagon's side door onto the end of a piece of a rail sleeper that had been cut to size so that the door would make a platform to stand on. If the driver had positioned the loco correctly, it would be close to the end of the door. I could then climb into the wagon to shovel coal into our loco's bunker. At the time I was young and able to do the work easily. At that time there were no health and safety considerations. I sometimes think back at some of the things we did that would not be allowed now.

After putting sufficient coal into our bunker, I

climbed down from the wagon. The driver and I closed the wagon door and stored the piece of wood safe for the next time it was needed. Then we moved the engine to a water tower to fill the tank ready for the afternoon's work which was mainly going to Menzies sidings with engine and brake van to bring out the traffic that had been taken into Fibreglass to be loaded, or remove empty coal or sand wagons from Nuttalls.

Bad Joint on the Eccleston Branch

On one occasion, between trips to Menzies, I recall that we were told to go to Triplex on the Eccleston Branch because they had some traffic to be picked up. We collected the staff and got the signal for the branch and set off. Our engine was propelling the brake van with the two shunters in it. The Triplex sidings were about three miles away and the line was in very poor condition. Not much maintenance had been done for years. In places, the rails were covered with weeds. The line (which ran parallel to Knowsley Road) was in a shallow cutting behind the old St Helens Rugby ground. It was particularly bad because of a tendency to flood. Because of this our speed was slow.

Just after we had passed under Dunriding Lane bridge the engine came to a sudden stop we all thought we had become derailed but after inspection we found we were still on track but we were on a very bad joint in the rails. With our loco being six wheel coupled the centre pair of wheels were driven by the cylinders and connecting rods. Given the age of the loco, all the bearings and axle guides were worn. When the wheel set dropped into the bad joint they also dropped onto the brake shoes. The wheel set locked, and so although we were not derailed, we were unable to move.

The two shunters, the driver and I discussed the best way out of this situation. One way was for me to take the 'Staff' and walk to

Marsh's Crossing signal box to get an assistant engine to come from Canal Bridge to pick me up for me to pilot the driver onto our engine and push us clear of the bad joint. Our driver came up with another idea. If we uncoupled the brake van, the two shunters and I pushed the van a short distance away, then push the van back as hard as we can into the engine, the driver would be ready with steam on and the engine in reverse when the van hit the locos buffers it might jolt us off the bad joint.

After some discussion, we all agreed to the driver's idea. The brake van was uncoupled and the two shunters and I pushed it up a slight incline to about forty feet away. We then changed places to push the van back towards our loco as hard as we could. The driver had put the loco in reverse and opened the regulator ready for when the vans buffers met the locos buffers. Although there was an almighty bang when they met, and there was a small movement, we were still stuck ! We tried again. This time we pushed the van further away then back onto the loco with another bang resulting in a further small jolt. We decided to try once again. If we were unsuccessful, I would have to walk to the signal box for assistance. We had one more push away then back as hard as we could. Success ! This time the loco moved clear of the bad joint. The brake van was coupled to the loco and we all boarded the train. The driver set back a little more, then he went forward faster than usual to get over the suspect joint. We were concerned that if we were too fast, we might derail. There was a jolt as we went over the bad joint, but no derailment !

We made our way to Triplex sidings to pick up the three or four wagons there. On our way back, as we approached the bad joint, the driver put on a little more speed to make sure we didn't get stuck again ! I didn't go over that branch again for a few weeks, and by



Above : National Coal Board Western Area No 7 Robert, a Hudswell Clarke 0-6-0ST built in 1943 which arrived at Bold Colliery in 1978, passes through St Helens Junction en route to taking part in the Rainhill 150 Celebrations in 1979. This locomotive is preserved on the Great Central Railway. **Photo** : Rod Dixon Collection

then platelayers had packed the sleepers and renewed the joint.

Shunting and Servicing Routine

When we got back to Ravenhead sidings, we shunted Triplex wagons clear, allowing us to resume the work of clearing traffic from the Fibreglass Works. This was mostly vans that had been put in the works empty and were now loaded for us to take down to Marshes Signal box. The driver stopped the train clear of Ravenhead sidings, the shunters secured the train and uncoupled the engine and brake van for us to run clear. The shunters then released the side brakes on the wagons to allow them to run down into an empty siding towards the Canal Bridge where that engine would put them into trains to be forwarded. We would trip up and down as required until about six thirty when the shunt engine that

had gone to the depot for servicing at mid-day relieved us so that we could take our loco to Sutton Oak and leave it to be serviced. Time to book off !

Footnote

Although the saddle tank locos we were using then were very old, the design continued to be used for many years as small works locos. A number were built for overseas work for the War Department during World War 2. After the war, several were sold to steel works and collieries in Britain. The saddle tank named 'Robert' - based in Bold Colliery - took part in the Rainhill Rocket Cavalcade in 1980 . I think there are still a few working on preserved railways .

Rod Dixon

Demise of the CLC around Liverpool : (Part 3)

Phil Graham MBE

Brunswick Station

1 Jun 1864 – Brunswick Station opened to passengers and goods traffic.

25 Feb 1874 – in connection with the extension through to Liverpool Central, a signalbox known as Brunswick Junction was opened.

2 Mar 1874 – following the opening of Liverpool Central, Brunswick Station closed to passengers.

1878 – Brunswick Junction Signalbox was abolished and the first Brunswick North and (the only) Brunswick South Signalboxes opened.

7 Aug 1904 – the second and final Brunswick (North) Signalbox was commissioned with 44 levers.

28 Feb 1937 – the lever frame in Brunswick North was reduced to 34 levers, and the world's first NX panel (which was of what was later known as 'turn and push' design) was commissioned to eventually control all the new Main line colour light running signals, the motor worked points giving access to the engine shed, the south trailing crossover, the facing connection in the Down Main to the Down Arrival line and the associated ground position light shunting signals. Initially, however the south end of the layout, including the access to the shed, the south end crossover and the access to the Down Goods Arrival line continued to be controlled from Brunswick South Signalbox, as part of the stage-works.

What is now known as 'Track Circuit Block working' was introduced between Brunswick and Liverpool Central.

By Mar 1938 – the 22 lever Brunswick South Signalbox was abolished and its functions were transferred to Brunswick (formerly North) Signalbox. When fully commissioned, the NX panel at Brunswick controlled nine 2, 3 and 4 four aspect colour light running stop signals on the main lines, two ground position light signals, the shed outlet signal, and three sets of double-ended motorised points. They were as follows:

- Brunswick (former North) Up Outer Home signal **No. 51** (at St. James' old station) which remained as a four aspect colour light signal.

- Brunswick (former North) Up Home signal **No. 52** which was replaced by a four aspect colour light signal.

- Brunswick (former North) Up Section signal which was replaced by a three aspect colour light signal which was carried on a bracket fixed alongside the engine shed wall – **No. 53**.

- Brunswick (former South) Up Section signal which was replaced by a two aspect colour light signal and became the Brunswick Up Section signal – **No. 54**.

- Brunswick (former South) Up Intermediate Block Distant signal (located just before trains emerged from the southern portal of Dingle Tunnel) which remained a two aspect colour light signal – **No. 55D**.

- Brunswick (former South) Up Intermediate Block Home signal which was replaced by a two aspect colour light signal, located about 200 yards south of St. Michael's Tunnel – **No. 55**.

- the outlet signal from Brunswick engine shed which was replaced with a two aspect (R / Y) colour light signal – **No. 56** - with a

third (top) aspect which was normally not lit but exhibited an “M” when the points were set for the Main line. The normal indication of this signal was yellow without a route indication. This was exhibited when the points were set into the spur.

With the points set and the line clear onto the Main Line, the signal would display a yellow aspect with the “M” in the route indicator. This signal could also be set to display its red aspect, and would display this while the points were being re-set.

When a locomotive was to leave the shed the Fireman was required to use a bell plunger located close to No. 56 signal post, to communicate with the Signaller, as follows :

- 1 Ring for a loco for Liverpool Central.
- 2 Rings for a loco for Brunswick Yard.
- 3 Rings for a loco for the Cressington direction.

- to shunt back from the south end of the Down Goods Arrival line to the Up Main line, the former South box signal was replaced with a ground position light signal which displayed a red and a white light, horizontally displayed, when the signal was at Danger, and two white lights at an angle of 45 degrees as the clear indication, which authorised a Driver to proceed to the next signal, or as far as the line was clear towards it. This was **No. 57** signal.

This display of lights at a ground position light signal became the standard for new work everywhere after the war, but this (and No. 61 signal) was the first application of this display in this country, and the Cheshire Lines had had to seek authority from the Railway Clearing House to depart from the hitherto accepted practice of all the lights being white, and it simply being the position of the lights (hence the term ‘position’ lights) – horizontal “on” or 45 degrees off. With the former, all white, type of position light, the signal was not cleared for movements along the main line, when a train had

been signalled there by a clear main aspect. In other words, a Driver drove from main aspect to main aspect and passed any position light in the route with its horizontal display. The position light only instructed the Driver to stop if he had either been signalled to it by another position light (ground or subsidiary) or his movement had reversed behind the ground position light. With the advent of red aspects in ground position lights, if such signals were between main aspect signals, they always had to be obeyed, and therefore had to be cleared before the main aspect signal for the route.

- the set-back signal from the Up Main line which led either to the Down Goods Arrival line, the Down Main line, or to the engine shed. This signal was replaced by another ground position light signal. This was **No. 61** signal, and was identical in design and lamp display to No. 57 signal, but, as it could be cleared for three separate routes, it had a route indicator, with three normally unlit boxes sited below the main display – “G” in the left hand box, when the signal was cleared into the Down Goods Arrival, “M” in the middle box, when the signal was cleared for the Down Main line, and “S” in the right hand box when the signal was cleared to the engine shed. (All letters were illuminated in white).

Before the Signaller cleared No. 61 signal for an engine to enter the shed, he was first required to place the outlet signal (No. 56) to Danger which would then cause a loud-sounding trembler bell, fixed to No. 56 signal post, to sound for 30 seconds. Staff hearing this bell were required to at once move any loco that was fouled, was in the spur, or was standing at No. 56 signal well clear, and make room for the incoming movement. Until any such locomotives had moved clear, the track circuit controls prevented No. 60 points from being reversed to give access to the shed.

- the Otterspool Down Intermediate Block Home Signal (No. 10) which was replaced by a

four aspect colour light signal, which also acted as Brunswick's Down Outer Home signal – **No. 65**, with which it was slotted. This signal was located just beyond the north end of the Down platform at St. Michael's Station. The Distant signal for this IB / Outer Home signal (**No. 65D**) was a semaphore arm carried below the Otterspool Down Section signal. To clear 65 and 65D signals, Otterspool No. 10 lever had to be reversed and Brunswick 65 switch had to be turned to the right.

The Down Directing Home signal which was replaced by a four aspect colour light signal located just before emerging from the north portal of Dingle Tunnel. At this signal (**No. 64**) the main aspects were only cleared for movements along the Down Main. When cleared for the Down Arrival line, the main aspect remained at red and a normally unlit subsidiary illuminated to display a white letter "G" and one of two miniature aspects below the "G" illuminated to show a small yellow aspect if the Arrival line was already occupied, or small green light if the Arrival line was clear to the semaphore Down Goods Arrival Home signal.

A telephone was provided 80 yards inside the Goods Arrival line to enable Guards of freight trains or Firemen of light engines to report to the Signalman to confirm that their train had arrived complete with tail lamp attached.

- the Down Main Home – **No. 63** signal which was replaced by a three aspect colour light signal, mounted on a straight post, just in rear of the signalbox.

- the Down Main Section signal – **No. 62** – which remained as a three aspect colour light signal which also continued to act as the Down Outer Distant Signal for Liverpool Central. This signal was mounted on a straight post located just into the cutting leading to Liverpool Central.

Motor worked, double ended points were

provided as follows :

No. 58 facing points - from the Down Main line to the Down Goods Arrival line and the co-acting trailing trap points in the Arrival line.

No. 59 – the trailing Main to Main south crossover.

No. 60 – the trailing connection in the Up Main which led to the shed and co-acted with the facing points from the shed to the Up Main or to the spur, in which latter position they also served as the trap points from the shed.

Drivers of through trains to and from Liverpool Central were instructed to be vigilant when passing Brunswick Yard and **not** to assume that if they had received a green aspect at 65 signal at St. Michael's, or at 51 signal at St. James' that they would still have clear signals at Brunswick, but to be careful to observe the aspects displayed there. There was also a 25mph speed restriction for trains passing the yard, around Brunswick curve. (This speed restriction still applied in 1937, but by 1960, it had been eased to 40mph). These precautions were presumably prescribed in the case of any shunting mishap causing the Main line(s) to be fouled.

Sep 1961 – With most of the Gateacre, Warrington and Manchester services from Liverpool Central now in the hands of two and four car DMUs (of what were to become Class 108 and Class 115) based at Allerton TMD, Brunswick Shed closed as a motive power depot; most of its then fleet of 30 locomotives being reallocated to Speke Junction or Trafford Park

13 Dec 1964 – the south crossover road between the Up and Down lines on the Manchester side of the box (**No. 59** points) was taken away.

The position light type ground signal with three-way route indicator situated outside the Up Main line on the Manchester side of the above mentioned crossover (No. 57 signal) now read to the former Shed only.

The position light type ground signal (No. 57) situated between the Down Goods Arrival road and the Down Main line was taken away.

9 May 1965 – the trailing connection from the Up Main to the former engine shed (No. 60 points) was secured out of use, pending removal, and No. 61 ground position light signal was taken away.

So the world's first NX route setting panel (*now in store at the NRM*) now only directly controlled one set (of double ended) points – No. 58 points from the Down Main to the Down Goods Arrival, which were to remain controlled from the panel until the December 1972.

All other routes set from the panel were either in plain line or over points that were operated from the mechanical lever frame, and interlocked with them.

5 Sep 1966 – the trailing connection from the Up Main to the Middle Road taken out of use and secured.

1971 – Brunswick Goods Station closed to general goods traffic. It had once boasted a 40 ton crane and, for a short time in 1968 and 1969 had seen Freightliner traffic.



Above : The 'Liverpool Docker' railtour seen alongside the Brunswick Signalbox on 22 Feb 1969. **Below** : Brunswick Yard in 1970 - the connection to the right is former No. 60 points to the shed. Next are the remains of No.59, the south crossover. Just visible is the Down Main to Arrival – No. 58 points. Many oil tank wagons are present along with some general wagons.



Oil traffic from the ESSO Ltd. Private Siding continued until the middle of 1976.

10 Dec 1972 – the Down Main line was severed and a stop block was provided 300 yards on the Liverpool side of the box.

The Up Main line was taken out of use on the Liverpool side of the Up Main / Down Main crossover and these points were secured.

The points in the Up Main line were secured

to and from the Down Main line and from the Down Main to the Down Goods Arrival line.

The Down Main Section signal (No.62) and Up Main Outer and Inner Home signals (Nos. 51 and 52) were taken away. (In fact they were simply switched off).

The position light subsidiary provided below the Down Main Home 2 signal was taken away.

Group sidings 4 to 7 were shortened and stop blocks were provided.

The Dock Siding was slued into the Shunt Road at the Otterspool end. The diamond sign was taken away from the Up Main Starting signal.

The two sidings behind the box, together with the connections to the Down Arrival line, and No. 7 siding adjacent to the Carriage Road were taken out of use and the associated signals were taken away. The Up sidings were taken out of use and the associated signals were taken away. The shunting signal on the outside of the Up Main line, 88 yards on the Otterspool side of the box and applying to set back movements from the Up Main to the Down Main was repositioned 36 yards nearer the box.

Wed / Thurs 12 and 13 Dec 1973 – Brunswick box was abolished and all signals were taken away.

The Up and Down Main lines from Hunts Cross West Junction to Brunswick became Goods lines.

All points became hand-worked except for the trailing trap points in the Down Arrival line which were secured closed. A Scotchlite “Stop and Await Instructions” board was provided adjacent to the Down Goods line at the exit from Dingle Tunnel

Scotchlite “Stop and Telephone” boards were

provided for Down trains, 50 yards before reaching the site of the box, and for Up trains at the entrance to Dingle Tunnel.

The telephones at these boards were connected to Cressington box and were kept in locked cupboards fitted with ex M.R. carriage key locks.

Absolute Block conditions continued to apply between Cressington and Brunswick but without Block Instruments or single stroke bells; messages being sent over the telephone to the Chargeman at Brunswick (Although all trains were now shown in the WTT to stop and collect or surrender a train staff at Cressington Signalbox, and there were never two trains timed to be on the lines beyond Cressington at any one time).

The NX panel from Brunswick (although interestingly not the first that was installed in the box, but a very early replacement – probably provided by 1940), was claimed by the British Transport Museum at Clapham, and subsequently taken to the National Railway Museum at York. Here, after spending many years in storage, it was exhibited for a few years, before being taken back into store in Wroughton, Wiltshire, where it is at the moment.

16 Mar 1974 – in connection with the re-modelling of Brunswick Yard, all sidings and connections were secured out of use, except Midland Siding and the Shunt Neck and the connections to the Loop line, No. 1 Goods Carriage Road, Dock Line, Shunt Road and connections to the ESSO petroleum depot, Nos. 4, 5, 6 and 7 sidings and connections to the Loop line.

7 Sep 1975 – to facilitate repair works in Dingle Tunnel, the Up Goods line to Cressington was taken out of use. The Down Goods line became the “Up and Down” Goods line and was worked in accordance with the One Train Working OTW(S) Regulations to and from Cressington.

Temporary buffer stops were provided on the Up Goods line at the Brunswick end of Dingle Tunnel and 180 yards on the Brunswick side of Cressington box.

The "Stop and Telephone" boards were taken temporarily out of use.

Mon 2 Feb 1976 – the repair works now moved to the Down side of Dingle Tunnel and the Down Goods Line between Cressington and Brunswick was taken out of use, and the Up Goods line was brought back into use as a single Goods line worked in accordance with the OTW(S) Regulations.

The buffer stops on the Up Goods line at the Brunswick end of Dingle Tunnel were taken away.

Temporary buffer stops were provided on the Down Goods line at the Brunswick end of Dingle Tunnel.

working, 6F50 17.27 from Holywell Junction, which arrived back at Brunswick at 19.39. These services were specifically shown only to run until Friday 2nd July. They comprised 18 x 45t TTA crude oil tanks and were usually hauled by a Class 40 locomotive, which arrived light from Garston Holding Sidings at 12.31 to work the loaded train, and worked back there at 19.55 after leaving the empties to be drawn into the private siding (within the dock estate) by ESSO's own shunting locomotive.

A crude oil service had also run to Drakelow until 5th October 1975 – 6M34 18.50 MWFO from Brunswick, returning as 6M32 23.55 MWFO from Drakelow to the Down Branch at Cressington, where it arrived at 04.10 TThSO, from whence it was tripped to Brunswick sometime after the box there reopened for the day.



Above : Brunswick Yard on 16 May 1976 – the work on the Down line in Dingle Tunnel can be seen.

2 Jul 1976 – the crude oil traffic ceased to pass from Esso Ltd. Private Siding. The only train shown to run from Brunswick in the WTT from 3 May 1976 was 6D40 13.06 SX to Holywell Junction, and its empty back

Another train, 6F57 07.58 SX / 08.34 SO to Shotwick Sidings, and its back working 6F33 13.19 SO / 15.17 SX from Shotwick (Brunswick arrive 14.48 SO and 16.40 SX) was timetabled to run until 4th May 1975. This train had also run on Sundays, leaving Brunswick at 10.05 and returning there at 16.29.

Similar traffic to Bromford Bridge had run until September 1973.

Oil traffic originating from Fulwood Sidings was refined naphtha.

All these trains ran to Brunswick to run round.

By 2nd October 1972, the only service shown

in the timetable was 6P40, now the 11.45 SX Fulwood to Lostock Hall. This service was not shown in the WTT after 6th May 1973.

Mon 5 Jul 1976 – the Down Goods line was brought back into use.

The “Up and Down” Goods line was restored as the Up Goods line. The “Stop and Telephone” boards were brought back into use. The “Stop and Await Instructions” board was brought back into use as a “Stop and Telephone” board with a telephone to the Chargeman’s Cabin provided.

The OTW(S) Regulations were with withdrawn and Absolute Block conditions to and from Cressington were restored.

31 Jul 1976 – all connections to Brunswick siding and the ESSO Petroleum private siding were secured out of use, pending removal.

12 Dec 1976 – the Down and Up Goods lines became Engineer’s Sidings No. 2 and No. 1 respectively.

All notice boards and telephones at Brunswick were taken away.

May 1998 – a passenger station was opened on the Hunts Cross to Southport line at Brunswick about where the pipeline bridge was in the photo below. After 146 years, passengers could once again joined and alight at Brunswick.

St. Michael’s Station



Above : St. Michael’s Station in early 1971.

1 June 1864 – St Michaels Station opened to passengers and a signalbox was opened.

28 Oct 1934 – the signalbox was abolished and replaced by Intermediate Block Home signals.



Above : Looking towards Liverpool, the site of Brunswick Signalbox and the site of the new passenger station; as seen in the dying weeks of the oil trains, and 18 months before electric trains started to pass the site - 16 May 1976.



Above : 11.30 Gateacre to Liverpool Central calls at St. Michaels while IL28 passes running non-stop from Liverpool Central to Manchester on 15 Apr 1972.

15 Apr 1972 – the passenger service was withdrawn.

Mar 1975 – the Down and Up platforms were extended by 75 feet at the Brunswick end.

3 Jan 1978 - the passenger service was restored – Kirkby to Garston as a 750v dc operation, serving Liverpool Central Low Level.

Fulwood Siding Ground Frame



Above : Fulwood Sidings Ground Frame connection in 1971

26 Oct 1942 – originally as part of the war effort, a ground frame was commissioned to control the newly constructed oil sidings, where imported oil that was held in underground storage tanks, having been piped

there from Dingle Oil Jetty, was loaded into rail tank wagons.

Four full length sidings were laid, two each side of the loading rack and two others. A train would be split to enable both halves to be loaded simultaneously. The other two full length sidings (nearest the main line) were used for stabling tank wagons. There was also a short cripple siding and a short shunting neck which also acted as the trap.

The connection with the main line was by a set of trailing point in the Down Main line; so all departing trains needed to depart in the Down direction and then run round at Brunswick.

The ground frame was electrically released from Otterspool Signalbox.

Early 1970s - Oil traffic originating from Fulwood Sidings was in the form of refined naphtha.

Until 3rd October 1971, there were two departing services – 6P40 10.38 SX Fulwood to Lostock Hall, with the traffic conveyed in new 10 x 100t TEA bogie wagons, usually hauled by a Class 47; and 6P56 15.00 MWFO to Barrow-in-Furness, which was formed of 18 x 45t TTA, usually hauled by a Class 40. By 2nd October 1972, the only service shown in the timetable was 6P40, now the 11.45 SX Fulwood to Lostock Hall. This service was not shown in the WTT after 6th May 1973.

It is not clear what, if any traffic passed after May 1973, but the ground frame was not finally taken out of use for another three years, and the storage tanks remained full until 1978 / 9.

Wed / Thurs 12 and 13 Dec 1973 – the electrical release was transferred from Otterspool to Cressington box. A telephone to Cressington box was placed in a locked cabinet secured with a former M.R. carriage key.

7 Sep 1975 – the ground frame was taken temporarily out of use.

5 Jul 1976 – the ground frame was brought back into use.

12 Dec 1976 – the ground frame was taken out of use and the points were secured out of use, pending removal.

1978 / 9 – a few oil trains were run by night during possession, and with a Class 08 locomotive at each end to enable the storage tanks to be emptied.

These trains constituted the very last commercial freight traffic on the CLC west of Hunts Cross West Junction.

Once the last of these trains had run, Fulwood Sidings were removed and the trailing connection in the Down Main was replaced with plain line. The area was then landscaped as part of the 1984 International Garden Festival site.

Otterspool Station

1 Jun 1864 – Otterspool Station opened to passengers.

3 Mar 1951 – Otterspool Station closed to passengers.

Otterspool Signalbox.

4 Jul 1912 - a new 36 lever frame signalbox was commissioned on the Up side of the line, replacing the original, which dated from 1 Jun 1864 and had stood on the Down side at the station.

The new signalbox was necessary to control the exit from a new Goods line (of 60 SLU) from Mersey Road and the Back Road siding that was laid alongside it.

This scheme had been part of a plan to build

a rail-served coal dock on the nearby River Mersey. The 36 lever frame was therefore built with 14 levers spare, ready to be used for the anticipated coal dock connections and associated signals.

Construction of the coal dock was commenced, and the dock walls were built, but the scheme was soon was in financial difficulties. The proprietor (P. B. Clarke) became bankrupt and allegedly committed suicide by throwing himself into the partially completed dock.

The potential for a rail connected dock at Otterspool had been seen by the CLC as far back as 1875 when the company had purchased the 65 acre Otterspool Estate. This was then followed by the purchase of the 88 ½ acre Jericho Estate in 1892. Some of the land was leased to American citizen, Mr. P. B. Clarke for £300 per annum, for 21 years in 1909. Mr. Clarke established the "Otterspool Coal Dock Limited" company in 1912, to whom the lease was transferred.

Arguably navigation in the Mersey should have been easier to a dock at Otterspool than to the more southerly, successful Garston Docks (which were in L&NWR ownership). Coal was to have been loaded into barges, which would then have been worked out into the Mersey, enabling vessels to be coaled at any stage of the tide. However it was not to be, and Otterspool Coal Docks went into liquidation in 1913.

The site languished for a while, but with the grouping of the railways in Britain in 1923, the L&NWR became part of the LMS, who then owned Garston Docks, and were a third owner of the CLC. Competition with Garston Docks was therefore no longer attractive, and the CLC sold all but 4 ½ acres of the land they had purchased, to Liverpool Corporation in 1925, who had the partly-completed, derelict dock filled in in 1930.

The site eventually became parkland and a riverside promenade, work on which commenced in 1930.

The Goods line and siding, built to serve the abandoned dock scheme, were to remain, as a useful staging, refuge and stabling facility for freight trains on the approach to Liverpool.



Above : *Otterspool Signalbox in early 1971 – seen from the points from the Backroad Siding to the Loop, with the trailing connection to the Down Main ahead. The ill-fated coal dock would have been to the left and slightly behind the photographer.*

25 May 1933 – with the abolition of Mersey Road Signalbox, the Down Goods line was renamed the Otterspool Down Goods Loop.

15 Jun 1963 – all Down Main line running signals between Cressington and St. Michael’s were replaced by four aspect colour lights.

The Outer and Inner Down Distant signals were the yellow and double yellow aspects in Cressington Section (3R) and Home (3RR) signals.

The Down Home 1 Signal (No. 3, at Mersey Road), previously a lower quadrant semaphore signal carrying an accelerating Distant arm (No. 2) below, with a full arm offset to

the left (No. 4) reading to the Down Goods loop and a calling on arm (No. 5) on the main post, reading to the Goods loop (occupied), was replaced by a four aspect signal with an offset subsidiary (No. 4) and a calling on feature – No 5 lever - (stencil “C”) reading to the Goods loop.

The former Down Home 2 semaphore signal which had protected the exit from the Goods loop was replaced by a four aspect colour light on the Brunswick end of the former Down platform (the Home 1 signal now protecting both entrance to and exit from the loop).

The semaphore Down Section signal (No. 9) which also carried the motor worked Down IB Distant arm (No. 10R) was replaced by a further four aspect signal about 200 yards on the Brunswick side of Fulwood Tunnel.

The Down IB itself remained as the four aspect (top to bottom G, Y, R, Y) and continued to act as Brunswick’s Outer Home signal when Otterspool Signalbox was switched out.

At the exit from the Back Road siding and Down Goods loop, full arm semaphore signals Nos. 7 and 8 respectively were replaced by ground disc signals and the former subsidiary arms were abolished.

Re-signalling on the Up Main was confined to the replacement of the co-acting Home Signal and Section Signal with IB Distant below, with a three aspect colour light Home signal (No. 32) which stood close to the edge and in the middle of the former station platform, and

was bracketed out to the right above the line (the previous co-acting semaphore Up Home signal had been sited on the Down side for sighting reasons because of the reverse curves).

The Up Distant signal (No. 31) remained as the yellow aspect in Brunswick's Up IB (3 aspect with an auxiliary yellow lamp).

Otterspool's Up IB remained as a motor worked semaphore with Cressington's mechanical Distant arm slotted below.

Wed / Thurs 12 and 13 Dec 1973 – Otterspool Signalbox was abolished.



All points worked therefrom were secured out of use, pending removal and all signals were taken away. (The colour light signals were all actually left in situ but were switched off).

'Smoke Gets in Your Eyes'

Tony Foster

The May (2021) edition of *'Steam World'* carries a superb collection of colour photographs of converted 'Crostitis' taken by rail photographer Gavin Morrison. Sadly, the article includes no photographs showing the original Franco Crosti layout.

At school in Kettering in the 1950s (near to the Crostitis original 15A Wellingborough shed), I regularly saw these strange looking locos where the smoke appeared from a large flue positioned on the side of the engine, a short distance in front of the fireman ! The experiment failed and all 10 originally fitted with Franco Crosti boilers (92020 - 92029) were converted and reclassified as 8F.

The photograph below, showing a freshly baked 92024, was sent to me by BR when I was obliged to prove to a friend (a boiler maker and non-rail enthusiast who simply refused to believe that anyone would design such a machine) that they had actually been built. Happy days !





'Oliver Cromwell' - Britannia Class No. 70013 has left its water stop at Frodsham and heads for Chester on a North Wales Coast Express on 21 August 2011. Its final destination was Holyhead.

From an 8D Member's Collection

'Steam Special' photographs taken locally by Chris Lewis



'Royal Scot' : On 16 April 2016, Royal Scot Class No. 46100 heads north through Warrington Bank Quay on a Railway Touring Club Special, steam hauled from Crewe to Carlisle, northbound via the Cumbrian Coast and southbound over Shap.



'Galatea' : Jubilee Class No. 45699 passes through Lea Green on 19 July 2015 with a Railway Touring Club Special - 'North Wales Coast Express' - from Liverpool. 'Galatea' failed at Llandudno Junction with a hot axle box.



'Flying Scotsman' : Ex LNER A3 No.60103 at xxxxxx on 16 May 2017. 'The Cathedral's Express' was steam hauled from Edinburgh Waverley to Crewe via the Settle and Carlisle - modern traction taking it on to London. It was the final part of a Steam Dreams' four day tour.

From Widnes to Kirkdale by Rail in 1860

Chris Lewis

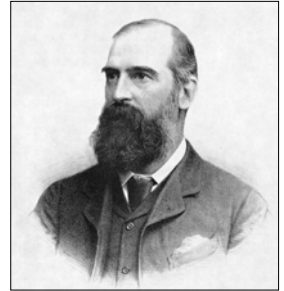
Before its temporary closure because of Covid, I had the pleasure of taking Sir Hugo Brunner around part of the Catalyst Science Discovery Centre in Widnes. The Centre contains information about his great grandfather, Sir John Brunner. Many of you will recognise the name as connected with Widnes, its Chemical Industry and the Transporter Bridge. Sir John also formed Brunner and Mond that subsequently became a part of ICI.

Hugo realised I was interested in railways and asked me how, in the period between 1860 and 1864, his great grandfather would have travelled from Widnes to Kirkdale where his future wife, Salome, lived. He was also interested to learn how his ancestor would have travelled from Widnes to Southport.

First of all, I had to find out which railways were open in this area at that time. The St Helens to Widnes (West Bank) line had opened in 1833 and been extended to Garston in 1852. However this was not extended into Liverpool until early 1864, so a horse drawn omnibus (or a ferry) would have to be taken into central Liverpool. It would then be necessary to transfer to another omnibus or train to Kirkdale. However, I thought he could have gone north and changed to the Liverpool to Manchester line (opened 1830) south of St Helens, either walking from Clock Face or Sutton Oak to St Helens Junction, or via a convenient train from Sutton Oak to St Helens Junction. By doing so, he could arrive at Liverpool Lime Street - more convenient than taking an omnibus from Garston !

However, Hugo still has letters sent from John Brunner to Salome that gave clues. He sent me the following extracts :-

- 21 March 1862 *"I shall come tomorrow by the 12.20 train & shall meet the bus leaving Kirkdale at half past two at the corner of Commutation Row & look inside for you."*



Portrait of Sir John Tomlinson Brunner, 1st Baronet, DL.
From Wikimedia Commons

- 22 April *"I shall be able to reach here by half past nine on Monday morning from Southport, if we are to be there - starting at a quarter to eight, by the "other line", & changing at Ormskirk and Rainford Junction, and that will suit pretty well."*
- 2 May *"I write in the greatest haste to tell you that the train will arrive at S'port at 5.00 pm. not 5.50."*
- 1 July *"... I shall follow my letter tomorrow, but not before the six o'clock train ..."*
- 25 June 1863 *"... Jones takes the train to Burscough that meets the one from Runcorn Gap ..."*
- 27 August *"... so [I] shall be obliged to put up with coming to Southport by the quarter past two express ..."*
- 26 October *"..... I shall go round the St Helens way and get out at Sandhills."*
- 10 June 1864 *"Please meet me tomorrow afternoon at three o'clock at Lime Street ..."*

I deduced from these notes that in fact he travelled from Widnes to St Helens and then on to Rainford Junction. The latter line opened in 1858, as did Rainford Junction station. This would have enabled him to catch a train from Rainford Junction direct to Kirkdale on the line to Liverpool (opened in 1848, slightly later to Liverpool Exchange).

When he went direct to Southport he would have travelled from Rainford Junction to Ormskirk, then taking a train (via the south to west curve at Burscough) to Southport. For the final journey mentioned, a few days before his wedding, the line from Widnes to Garston had been extended to Edge Hill in early 1864 and hence Lime Street. Incidentally, after they married they moved to a newly built house, in Kaludah Terrace, Widnes. The house is on the main shopping road

in the town, now occupied by Boots Opticians. A sign shows its original name.

Much of the information above is from the 8D website. It is interesting to note which lines were **not** open in 1860. The direct line from St Helens to Liverpool (via Prescot) only opened in 1871, and the CLC line from Widnes to Liverpool opened in 1873. The line through Runcorn to Garston did not open until 1868. In those days, a traveller had to be aware of which lines had opened - similar to what we had to do as the motorways opened in this country.

I have followed the line from Clock Face to Sutton Oak recently and there is a lot of evidence of where the line used to run. I will do the same, north of St Helens to Rainford soon.

Chris Lewis



Website provides a superb research facility

The 8D Association website (maintained by 8D Secretary Doug Birmingham) provides an excellent resource for railway historians, researchers and enthusiasts alike.

Recent additions to the 8D website include photographs taken by local rail photographer David Pool.

Members may also wish to visit the 8D Flickr site at :-

<https://www.flickr.com/groups/the-8d-association/>

The Flickr site includes a huge collection of images taken within the 8D area over the years by various photographers.

Plans to rebuild and relocate the 8D website are now at an advanced stage. Further information awaited.

Next edition of 'On Shed' : September 1st

The 25Kv A/c Overhead Power Supply System and AL6 / Class 86 Electric Locomotives

Dennis Flood

Part 1 : The Overhead Power Supply System

The remaining 16 Class 86 locomotives in service with Freightliner Intermodal were withdrawn from service in December 2020 and were placed into `storage` at Basford Hall Sorting Sidings at Crewe. It is not likely that any will be seen in regular service again following a service life of some 55 years – *a truly remarkable timescale.*

8D Association members will have seen for many years AL6/Class 86 locomotives passing through Runcorn en-route to and from Ditton Sidings with trains for Ditton O'Connor's Terminal or for Garston Freightliner Terminal in Liverpool whilst working Intermodal services to and from such places as Crewe Basford Hall Sorting Sidings North (BHSSN), Felixstowe and Tilbury to name but a few locations.

They were also, at one time, the mainstay of Liverpool Lime Street to London Euston and Birmingham New Street services with British Railways. Upon first introduction they were designated as AL6 Class.

These wonderful locomotives are worthy of an article of their own and the purpose of these articles is to give 8D Association members an insight into how they actually worked and the correct driving technique required to operate them.

However, before I do this it is important to give an insight into the Power Supply System that allowed them to operate successfully for so many years. The Power Supply System is, in its own way, just as fascinating at the AL6/Class 86 locomotive itself.

The British Railways Modernisation Plan – Historical Review

In December 1954, British Railways published their `Modernisation Plan` and within this plan was revealed the decision to electrify the London Midland Region lines from London Euston to Birmingham, Crewe, Liverpool and Manchester. The routes were progressively electrified southwards from Manchester and Liverpool and, as adjoining sections were electrified, the routes started to open for the conveyance of commercial rail traffic.

The first section between Manchester and Crewe was formally energised on 12 September 1960 and this was followed in January 1962 by the Liverpool and Crewe section. The full electric service from London Euston to Liverpool and Manchester was introduced on 18 April 1966. The electrification project was finally completed with the introduction of electrified services from London Euston to Birmingham via Rugby and Coventry on 6 March 1967.

Electric Locomotive Manufacturers and Builders

An initial fleet of 100 25Kv 3300hp locomotives in the number range E3001-E3100 were brought into service in the early 1960s and these were built by numerous famous British companies such as The British Thomson Houston Company, Metropolitan Vickers, English Electric, The Vulcan Foundry, The North British Railway Company, Associated Electrical Industries and British Railways Works themselves to name but a few of the

`major players` involved in the modernisation of British Railways.

These companies represented the best of British mechanical and electrical engineering expertise at that time.

The first series of the initial fleet, built by the companies mentioned, involved five different basic designs of electric locomotive with detail differences in their manufacture and numerous engineering lessons were learnt as a result during their operation in service.

The second series of electric locomotives built in the number range E3101-E3200, known as the AL6 Class, were manufactured using the same specification whilst retaining the equipment and electrical circuitry which proved successful on the five original designs of electric locomotives built earlier. They were also fitted with several new features during their manufacture with the aim of increasing reliability whilst at the same time simplifying locomotive maintenance and repair procedures.

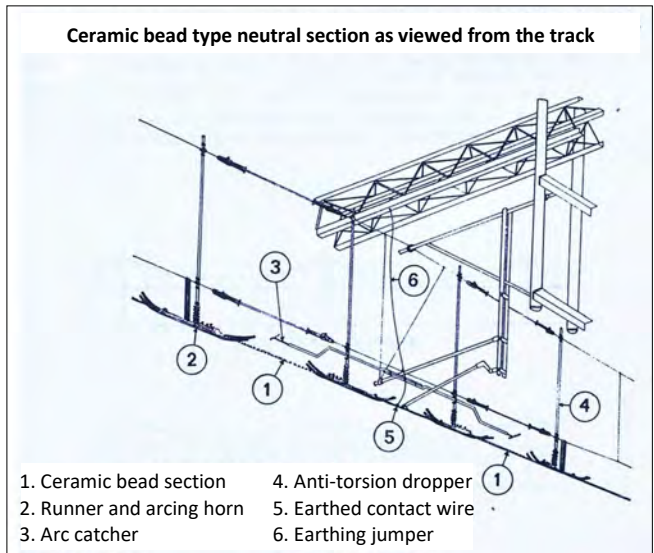
Power Supply Systems

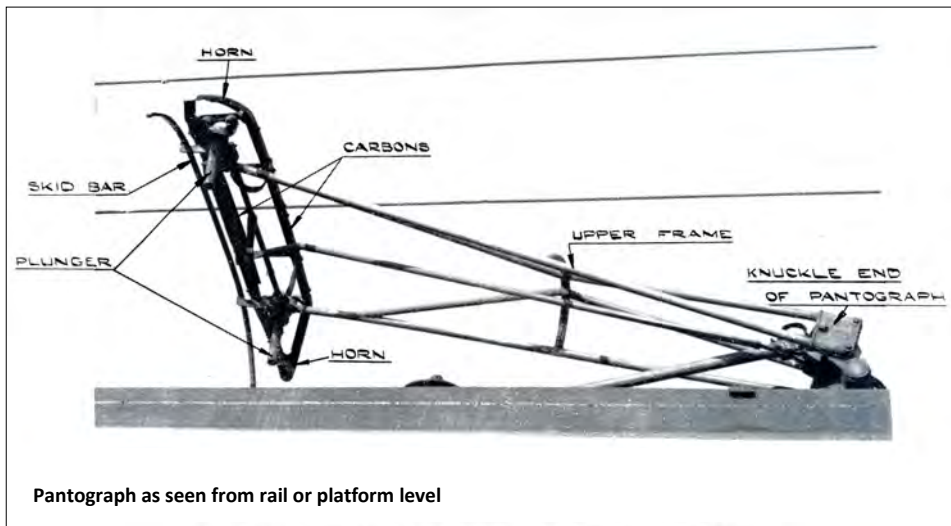
A 25Kv alternating current (A/c) system of overhead line equipment was selected for use. Previous common electrical systems in use on British Railways had generally used a 650/750v direct current system (D/c) on the Southern Region and in the Liverpool and Wirral areas of the London Midland Region. A 1500v system (D/c) was in use from 1953 on the Manchester to Sheffield route via Woodhead Tunnel. Using the 25Kv alternating current system permitted higher voltages to be used

on the overhead line supply and this allowed a reduction in the number of lineside Feeder Stations required.

A three-phase electricity supply was provided by Central Electricity Generating Board (CEGB) power stations via the National Grid network to supply sub-stations, which were also owned by the CEGB. The National Grid supply distributed across the countrywide network is at a variable voltage of between 275,000v—400,000v. It is at this high voltage because the transmission cables not only transmit electricity but are `resistors` to electricity flow themselves.

For railway traction supply purposes this high voltage is reduced to 132,000v from the National Grid network and, after passing through `step-down` transformers and Oil Circuit Breakers, two of the three single phase A/c supplies are then `stepped down` to 25,000 volts (25Kv) and the current is then passed to British Railways lineside Feeder Stations to supply the overhead electrified power line, which is so familiar to us today.





This supply then passes to the overhead power line suspended directly above the track. The current from the overhead power line is collected by a pantograph mounted on the roof of the locomotive and it is then further 'stepped down' and then rectified from A/c to D/c current for use on the traction motors of the locomotive. The return current flows back to the Feeder Station through the running rails or via a return conductor.

An Oil Circuit Breaker is one where the oil within it is used as an 'arc quenching medium'. If a fault were to occur within the supply system involving an Oil Circuit Breaker then its contacts will open beneath the oil and the 'arc' is 'struck' between the two contacts of the circuit breaker and the heat of the 'arc' then dissolves the oil which surrounds it and separates into high pressure gaseous hydrogen. This is then released to atmosphere externally.

The advantage of an oil Circuit Breaker is the reliability of it and its comparatively low cost. In addition to an Oil Circuit Breaker at the Feeder Stations, switch gear is also installed in Track Sectioning Cabins (TSCs).

This arrangement allows the 'sectioning' of the overhead line supply and thus gives protection to the overhead line system in the event of a fault developing either on the overhead line supply or on the locomotive. Under normal circumstances, lineside Feeder Stations and Track Sectioning Cabins are *unattended* and they are remotely controlled by a supervising Electric Control Room.

In the case of the Liverpool area, the North West and adjoining areas specifically, the supervising Electric Control Room is based at the Electric Traction Depot (ETD) in Crewe.

Overhead Line Neutral Sections

Neutral Sections are positioned at specific locations on the network. They are located in relation to lineside signals, junctions, lineside crossovers and turn-outs and this arrangement allows electric locomotives and electric traction units to be able to obtain sufficient speed which allows them to 'coast' through the Neutral Section, where the overhead line is electrically 'dead'.

The single phase power supply for the overhead line is supplied from lineside Feeder

Stations which themselves are supplied from the National Grid supply network, in the manner which I have previously stated. The line-side Feeder Stations providing the overhead line supply will, of necessity, be located at specific distances between themselves and they will be supplied and 'fed' from different current phases of the power supply from the National Grid network.

Neutral Sections provided in the overhead line equipment (OLE) are most essential to avoid two sections which are being 'fed' from differing National Grid current phase supplies from being paralleled.

In electrical terms 'paralleling' is when two or more component parts become connected between two different points in an electrical circuit so that the same voltage is applied to each of those points. This is not what is wanted on an overhead line power supply for railway traction purposes because of the different current phase supplies which occur when supplied by the National Grid network. Therefore, it can be appreciated why a Neutral Section is required.

The National Grid supplies the overhead power line with differing current phases and paralleling these different current phases can cause severe damage to a locomotive under these circumstances.

A locomotive will approach a Neutral Section whilst it is being supplied with one phase of current from the National Grid network and it then coasts through the Neutral Section where overhead power is temporarily and automatically lost.

When the locomotive exits the Neutral Section it then picks up, via the roof mounted pantograph, current from the National Grid network via the overhead line again but at a *different current phase*. In this way, no damage can occur and the locomotive then con-

tinues on its way when the driver powers up again.

In essence, a Neutral Section effectively divides the overhead lines from *differing current phase supplies* from the National Grid network.

A Neutral Section consists of two ceramic bead 'runners' which are separated by a short length of overhead contact wire. These ceramic bead 'runners' form the important insulating unit joints separating the different electrical current phases which arrive from the National Grid network and are supplied on either side of the Neutral Section. The short length of contact wire between the insulating ceramic bead 'runners' (it is about 15 feet in length) is directly connected to 'earth' to provide a path to the ground should an 'arc' be drawn through it by the pantograph of the approaching locomotive.

Overhead Line Equipment

The original overhead contact wire arrangement for the West Coast Main Line between London Euston, Birmingham, Crewe, Liverpool and Manchester as part of the British Railways 1954 'Modernisation Plan included three methods of suspension of the overhead contact wire for general use across the OLE network. These were known as **Simple, Compound** and **Stitched Catenary**. These contact wire arrangements are still in use on the WCML today.

Simple Catenary

This design consists of a main copper catenary cable which is suspended from steel masts by insulators and from these it is then further suspended by 'dropper' wires. This is the copper contact wire which makes physical contact with the locomotive pantograph and it is grooved on either side for suspension purposes.

Stitched (or Stitch) Catenary

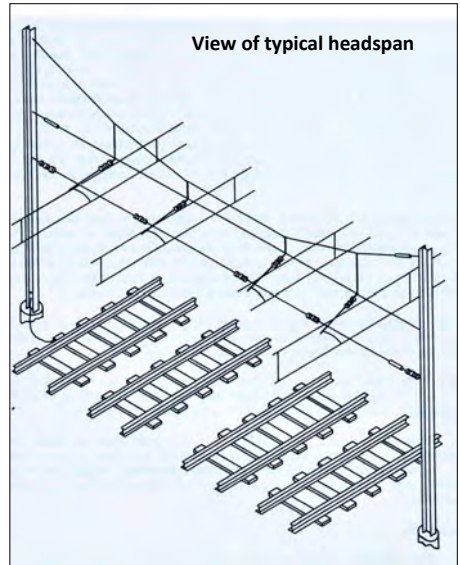
This method of construction and design is similar to the Simple Catenary system. The main difference is that a short 'stitch' wire is secured from two points on the main catenary with one on each side of the suspension points. This method of supporting the contact wire from the 'stitch' wire instead of the catenary ensures the contact wire remains very level under varying temperatures than that with a Simple Catenary suspension arrangement.

Compound Catenary

This design consists of a main catenary cable from which is then suspended, by means of 'dropper' wires, an auxiliary catenary.

The copper contact wire is suspended from the auxiliary catenary and this arrangement gives the *least* variation in contact wire level (*this is the least wire in contact with the locomotive pantograph*) due to the variations in atmospheric temperature changes and it is the most suitable for the higher speed sections of the route.

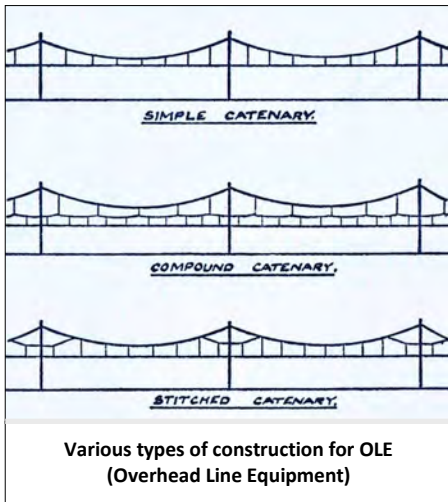
Suspension of the overhead lines is provided by supporting steel structures having their

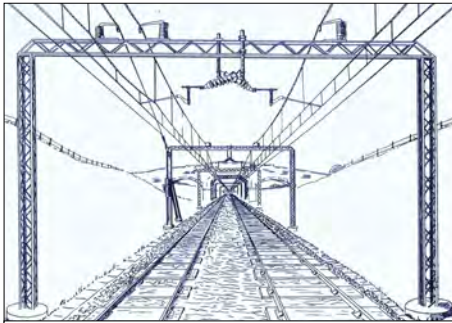


own concrete foundations. These Overhead Line Equipment (OLE) masts have a cantilever arm attached to them which reach out above the running line. This design is normally seen on 'open' routes. At stations and at various other locations such as multiple tracked areas and junctions a different type of structure is used.

This can be either a 'portal' structure, which is made up of two steel masts and a 'boom' or a head span structure, which is made up of two steel masts with a cable suspended between them. Both types of structure are capable of spanning a number of running lines.

To allow sectioning of the overhead contact wire, Section Switches are provided at various locations along the lineside. These Section Switches are normally attached to the OLE masts. Section Switches allow for local isolations of the overhead contact wire to be carried out and are manually operated by OLE staff. However, at locations where there are a large number of sidings or long sections of railway in which a Neutral Section is provided





Typical Portal structure



Typical Cantilever structure

these Section Switches are motorised and are under the control of the Electric Control Room that the specified area comes under.

To distribute wear evenly on the pantograph carbons over their surfaces, the overhead contact wire is `staggered` to the right and left of the centre line of the running line above which it is provided. This is done by use of a `Register Arm` on each OLE structure. The normal height of the overhead contact wire above the level of the rail is normally between 15ft 6ins and 16ft. However, this height can be reduced to 14ft if specified bridges and tunnels require it.

In certain locations, such as level crossings, the height of the overhead contact wire above the running line can be increased to a maximum height of 18ft 6ins.

The overhead line equipment for the 25Kv A/c system is normally tensioned by use of balance weights which maintain a constant tension in the wire itself throughout climatic temperature changes. Those 8D Association members who use Runcorn Station can observe these balance weights quite closely if they so wish. On the Crewe bound platform just beyond the bottom of the stairs of the footbridge at Runcorn Station can be seen OLE balance weights suspended from their own OLE structure. These OLE balance weights are an important part of keeping the overhead line tension constant on the supporting contact wire in the Runcorn station area.

If any 8D Association member has not seen these balance weights or have wondered what they were if they had then they are worth a quick look when travelling from Runcorn station or just having a visit. They are hidden in `plain sight` and have been for nearly *sixty years* !

With advances in OLE technology the recently electrified South Wales Main Line between London Paddington and South Wales does not require the use of OLE balance weights. The overhead contact wire is kept in `tension` by automatic tension adjusters fixed within the overhead catenary.

Part 2 (of 3)
AL6 / Class 86 Locomotives

In **Part 2**, in the September edition of *'On Shed'*, Dennis Flood highlights the background to the initial introduction of the AL6/Class 86 25Kv A/c electric locomotives, describing their features plus the driving technique required to drive them correctly.

To be continued

No. 571

E.R.O. 48101/1

BRITISH RAILWAYS
THE RAILWAY EXECUTIVE
(LONDON MIDLAND REGION)

“GRAND NATIONAL” DAY,
SATURDAY, APRIL 7th, 1951.

Admit bearer through wicket gate near the foot-
bridge at Fazakerley West Signal Box.

The Railway Executive undertakes no responsibility for and
accepts no liability to the holder of this ticket whilst in and upon
the premises and property of the Executive.

STANDING OR SITTING ON THE ROOFS OF
THE RAILWAY CARRIAGES IS PROHIBITED

LMS 26/6/43
From CANADA DOCK
(Liverpool)

Sp Tilapia

E.R.O. 34202/171

TO <u>WYRLEY 7</u>
<u>CHURCH BRIDGE</u>
LMS RLY. <u>4/11</u> SECN.
VIA <u>Stafford</u>

Owner and No. of Wagon **340068** 3 Sheets in or on Wagon

Consignee P. A. Northern

Collector's Corner

(Courtesy of Phil Graham)

Above : This 70 year old souvenir 'Grand National' ticket demonstrates the lack of progress that has been made regarding passenger accommodation - we're STILL not allowed to stand or sit on the roofs of carriages !

At left : Was it the vessel (SS Tilapia), or was it a consignment of Tilapia (cheap fish of very dubious quality) that was referred to on this wagon's wartime label ?

If you have any images of railway collectables that you would be willing to share, please contact the editor at :-

tony.r.foster@btinternet.com