

# DISTRICT ELECTRIC TRAINS

## 25 – CATCHING UP

by Piers Connor

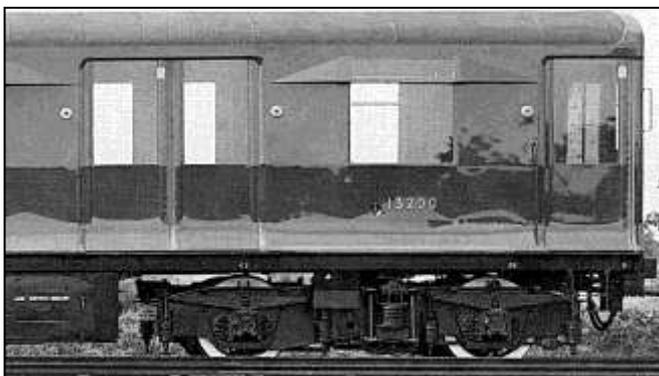
### PAUSE

This month I'm taking a pause in the story to do some catching up. In any series like this, there are little pieces of the jigsaw that get missed, photos that show something interesting but which don't necessarily fit in a particular month's theme and some gems that readers offer or that I come across in research. Recently, some new bits of the jigsaw arrived in a couple of responses from Mike Horne to my request for more information on the differences between the O and P Stocks. He also added some information about Q38 Stock. The details offered by Mike are shown with the photos that follow. After these, I look at some other odds and ends.

### O, P, Q DETAILS



*Fig. 1: Part of O Stock motor car showing the door glazing slightly offset (by almost an inch) in one door. Photo: LT Museum.*



*Fig. 2: Part of P Stock motor car showing symmetrical door glazing. Photo: LT Museum.*

To begin with, Mike sent in these two photos to show that O Stock double-door pairs (Car 13029, Fig. 1 on the left) were not symmetrical but that P Stock doors (Car 14200, Fig. 2) were. He writes that one door of a pair (and presumably the single door when not a double doorway) had a wider leading edge on the O Stock to carry the door control button on the door, but it was not fitted there. Buttons were fitted on the bodysides instead. As far as we know, all P/Q Stock had symmetrical doors. This is fairly obvious from photos if you are looking for it. Mike suggests correctly that my list isn't very clear and it implies that 'door frames were slightly bigger'. Here we have a better idea of what was going on. From inspection, Mike says, it seems that the doors were all same width but that the glass was slightly offset on one door of pair (between half and one inch) on the O Stock only. The photos also show that the external door buttons appear different on O Stock compared with P & Q Stocks.

Mike also reminded me that O and P/Q Stocks had a different set of modifications carried out on them when passenger door control was reintroduced post war. This was not surprising, as they had slightly different control systems before the war. In consequence of these different systems, Mike says, the O Stock open, close and signal buttons remained of the 'plunger' type until the stock was withdrawn, i.e. the visual appearance of the control boxes didn't change. I remember these from my days as a guard on the Met. Mike says the P/Q cars had the door open/close and signal buttons replaced as part of the rewiring with a different type of button, maybe to facilitate operation of the electric stick switches used on these stocks or maybe because the plunger type buttons were apt to jam. The modification involved removing the red and black 'plungers' and reaming out the guides (within the panel) and replacing them with top-hinged Bakelite buttons which, when operated, were arranged to act on the switches at the back. This was also done on 1938 Stock. At any rate it gave the four lower buttons on the panel a completely different appearance and, Mike suggests, gives us another difference between O and P Stocks.

## VENTILATORS



*Fig. 3: Interior of O Stock "D" motor car with end ventilation grille which was unique to this stock.*

*Photo: LT Museum*

There was, as Mike suggests, a variety of interior ventilation arrangements. The photo (left, above, Fig. 3), shows an interior of the driving end of an O Stock "D" end motor car of the 140xx series. It was the only O Stock location that had an interior ventilator grille and rather stylish it was too. The photo on the right (Fig. 4) shows the trailing end plain cover over the end door of the 130xx "A" driving car.



*Fig. 4: There is no ventilation grille on this trailing end of an O Stock "A" motor car. Photo: LT Museum.*

The lower photo on the right (Fig. 5) shows the style of end grille that P/Q Stocks had at both ends of all cars. It also reminds me that the communicating doors of the dummy cab ends of Q Stock trailers were of pressed aluminium, while the others were pre-fabricated and covered with steel panels. I wonder if they were interchangeable. I doubt it matters to anyone now but it must have been important to the shed staff who had to look after them. I do remember that all these end doors had small egg-shaped handles on the inside which were just too small to get a proper grip on and which made opening a sticky door very difficult, particularly if you were walking through the train trying to carry your bag, your tea and the driver's without spilling anything. If you were sensible, you carried your door key in your pocket to avoid the risk of dropping it between cars as you walked through. One guard, who did that whilst walking through his train in the yard, got out of the train and down onto the ballast and reached between the two cars to retrieve it. As he reached over the current rail, his steel watch strap, which he wore rather loosely, touched the positive rail and he received a nasty burn. It left a mark on his wrist which took several weeks to heal.



*Fig. 5: Ventilation grille on trailing end of a Q Stock trailer. This is the dummy cab end. Photo: LT Museum*

## AN EXTRA GRILLE

Mike points out an extra grille. In the photo on the right (Fig. 6) of the interior of a P Stock motor car, a large vent grille can be seen at the base of the draught screen. This was part of the Metadyne ventilation system unique to the P Stock version which thus did not appear on the O Stock. There were two such grilles. The other was in the seat riser of one of the transverse seats.

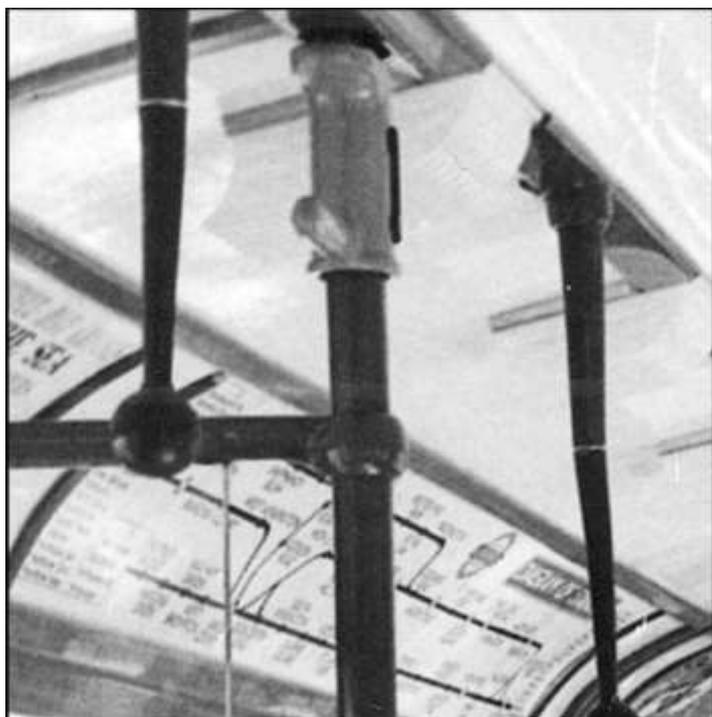
## PASSENGER ALARMS

There were two types of passenger alarm handles. Mike points out that O Stock intermediate passenger emergency handles had a kind of collar at the top of some of the grab poles – these were fitted with stub arms and to operate them – the whole device was pulled down, opening a valve somewhere (see below left). This arrangement had already been in use on the District, having been introduced on the K Stock in 1927. The P/Q Stock cars had a different setup – a simple valve with an operating lever (see above right). Mike notes too that the trailing end bulkhead passenger emergency alarms also varied in type and position, but this conformed with many other trains where the Passenger Emergency Valves (PEV) was placed more conveniently for the guard's use, usually next to the air brake pressure gauge.

As I describe in my series "The London Underground Electric Train"<sup>1</sup>, there were many problems with PEVs. Most related to malicious operation and that the operation acted directly on the brake pipe, causing the train to come to an abrupt stop, regardless of where it was. This feature was gradually eliminated from the early 1980s.



*Fig. 6: Interior of P Stock "A" motor car showing Metadyne ventilation grille at the base of the draught screen. Photo: LT Museum*



*Fig. 7: District Railway type of pull-down passenger emergency valve as used on O Stock. Photo: LT Museum.*



*Fig. 8: Lever type of pull-down passenger emergency valve as used on P & Q Stocks. Photo: LT Museum*

<sup>1</sup> The subject of passenger alarms is covered in more detail in "The London Underground Electric Train" Article No.18, *Underground News* No.540, December 2006 and Article 21, *Underground News* No.543, March 2007.

## NUMBERS

Finally, in the information he sent me, Mike added me a couple of photos of the internal car number plates. Of course, they were different on the P Stock when compared with the O Stock as shown in Figs. 9 and 10.



*Fig. 9 (Left): O Stock interior number plate as used on the "D" or 140xx cars. It was screwed to the ventilator grille over the end doors. The "A" cars had no grilles and the numbers inside the cars were transfers.*

*Fig. 10 (above): A P Stock number plate. This was*

Interestingly, the O Stock plate uses a non-standard typeface, whereas the P Stock one (Fig. 10) uses the corporate standard. I very much doubt there was a "standards manager" who complained that the O Stock plate didn't meet the design criteria but I suspect a very senior person would have inspected the vehicles and pointed it out. My thanks to Mike for gathering all this extra information.

## DEPOTS



*Fig. 11: Little Ilford Sidings looking east. Photo: The late Alan A Jackson.*

Now, a look at some of the odds and ends, starting with depots. There is often much to be learned from photos of depots. In this selection, we get a flavour of what was going on in three District depots in the 1950s. The first photo (Fig. 11 above) is a well known view of Little Ilford Sidings taken about 1956 before it was demolished to allow the new main line depot for the electrification of the London, Tilbury & Southend line. The site was never officially known as "East Ham Depot", the depot being the LT designation of the train crews signing on point. The office was at track level at the west end of the station – a long walk from here.

This photo shows the diversity of the fleet at the east end of the District. Looking from left to right, the first two trains are O Stock for the H&C, there's then a 2-car east end R Stock unit and then a complete R Stock train. Next is a Q Stock, an H&C and another Q inside the shed. On the far right is a westbound R Stock train coming from Barking. The present westbound track is roughly where the non-electrified track in the foreground left is in this photo.



*Fig. 12: A view of part of Cromwell Depot about 1955, with Q, R and Gate Stock.*

The next photo (Fig. 12 above) shows part of Cromwell Depot about 1955. The 4-car tube train is a set of former Piccadilly Line Gate Stock cars which were converted into a rail grinding train. It is standing on No.1 Road in the depot. It was withdrawn in 1956. Behind this train are the two ex-Metropolitan Railway sidings where they used to stable two Circle trains. Beyond these sidings are the two Circle line tracks. The tall building at the end of the sidings is the substation. In the depot, a Q Stock and R Stock train. The next two roads are in the maintenance sheds.



*Fig. 13: A view of the Boston (Manor) end of Northfields Depot with District & Piccadilly stocks about 1955.*  
 The photo above (Fig. 13) shows Northfields Depot taken from the road bridge at the Boston Manor end of the yard. It was always known to us who worked there as "the Boston End". Looking at the stock stabled on the occasion of this snapshot, we can see, looking left to right, Nos. 2, 3 and 6 roads are occupied by Standard Tube Stock, with R Stock (7 Rd.), Q Stock (8 Rd. and 10 Rd.) all of 8-car formation. The train on 11 Rd. is 1938 Tube Stock. Far over on the right is a 7-car Standard

Stock on 19 Rd. Just inside the shed on 19 Road was the drive-through washing machine. The lifting shop is on the far right (20 and 21 Roads) but District stock was not normally lifted there.

## CENTRE GUARD OPERATION

From the very beginning of electric train operation on the District, American ideas and technology drove much of the progress – air brakes, multiple-unit traction, powered doors, automatic couplers and electro-pneumatic brakes all originated in America and this trend continued after the Second World War when another idea arrived from across “the pond” – putting the door control in the middle of the train.

By this time, most air-door trains on the District (and the rest of the Underground for that matter) were operated by one guard working from the rear car. Door control panels were fitted in the trailing end wall of driving cars, one panel for each side. From here, the guard opened and closed the doors (or released the Passenger Door Control when it was in use) and controlled lights and train heating. He also had the train starting bell and a loudspeaker link to the driver. The system worked well enough but, with occasional visits to America by Graff-Baker and senior operating staff, new ideas often came back to London and some were tried out. Putting the guard in the middle of the train was one such.

In New York City, the Subway operated trains with split door control – and still do. The guard (conductor, as they call him) operated from the centre of the train with two sets of door controls, one for each half of the train, so that he could open and close doors separately on the two halves. The advantage of this system was that door closing could be done earlier on one half of the train and this could help get the train away more quickly. The central position also allowed better sighting for the guard.

The trial on the District was carried out on an 8-car Q Stock train (Fig. 14) where the door controls were provided on a specially adapted Q38 trailer, No. 013112. They were fitted on poles mounted either side of the cab door and seem to have been similar to the New York system, where the doors were opened with a trigger switch in the pole and then closed by unlatching the switch using a plunger on the top of the pole<sup>2</sup>. This train, formed of cars 4200-013144-013147-4159+013112-4165+014118-4161, was also the subject of an experimental installation of door fault indicator lights (Fig. 15), another import from the US<sup>3</sup>. The lights illuminated to indicate when a door interlock was open on a car, very useful in finding a sticking door on a crowded train.

Fig. 15, one of the photos that Mike Horne sent me, also shows the non-stop destination plates fitted on train sides after about 1938. They were not the plates previously used – they were rather smaller and designed to



Fig. 14: Experimental centre-guard operation as tried on the District in 1949. Photo: LT Museum



Fig. 15: Door fault indicator light as tried on the centre-guard train in 1949. This photo also shows the new type of destination plate introduced on stock built from 1938 for the non-stop indicators. Non-stop indicators were abandoned from January 1951. Photo: LT Museum.

<sup>2</sup> I describe this operation in “The London Underground Electric Train”, Article 23, *Underground News* No.545, May 2007.

<sup>3</sup> A train of Standard Tube Stock and one of 1938 Tube Stock were also fitted with door fault lights.

slide in from the side. Mike wonders if this may be related to the arrival of air doors and the difficulty of changing plates at termini on the offside of the train. He suggests that opening the doors on the wrong side to do so was allowed. I suspect it was due to the shape and position of the toplight fairings. The photo shows that it obviously wasn't possible to get a plate in from the top.

Logic suggests that only Q Stock trailers intended for District service ought to have continued having non stop indicator facilities but there is a photo, said to be of P Stock, showing a District-style destination plate box inside the car. Since the Met. never needed such equipment, could this have been a District P Stock car for which non-stop facilities were specially provided? Did they really do that? Somehow I doubt it. Transfers from the District to the Met. at the time were apparently random and I can't see them bothering to fit non-stop indicators to every car moved from one line to another. Non-stop indicators appeared on some of the early R Stock cars but photos suggest only some Q converted cars retained it, and then not for long. The instruction to remove them from all cars was issued in January 1951 and this work would have been done on cars as they went through Acton for overhaul. Some of them probably lasted for another 3-4 years.

As for the centre-guard experiment – it didn't last long. It started on 11 April 1949 in the working of Set 17 but it seems to have faded from view quite quickly. The LT Executive were probably frightened by the cost of modifying trains, adjusting the position of the starting signal repeater on each platform to allow the guard to see it, providing sighting boards to show the guard the train was stopped in the right place and the difficulties with remotely isolating end doors on 8-car trains at the short platforms found at many of the central area stations. A parallel trial on the Piccadilly Line convinced them that the idea wasn't worth the trouble. In the meantime, the door fault indicator light trials continued and were adopted on the R Stock and all subsequent fleets. Although they were originally red on the test train, people realised that a red light could be mistaken for a stop signal and they were changed to yellow in June 1949. This became the standard for all new stock.

## **F STOCK ON THE MET.**

The plan to transfer the F Stock from the District to the Metropolitan Line was implemented between June 1950 and February 1951. Soon after that the rehabilitation programme for the stock began and cars were sent to Acton for their upgrade work. The intention was that the trains would be used on the Uxbridge service and normally they were but it wasn't unusual for them to be used on other routes too (Fig. 16). Electric trains started working on some duties north of Rickmansworth in September 1960 and F Stock occasionally appeared on these trains from that time.



*Fig. 16: Ex-District 1920 F Stock running through Chorley Wood on an empty stock working from Amersham to Rickmansworth. This is probably at the end of the evening peak service. Such empty stock trips were often a chance for a guard to get "a go on the handle". The driver, if he knew and trusted his guard, would often allow him to drive the train on empty trips. I wonder if this is happening here. Electric trains started working north of Rickmansworth in August 1960. By this time, the F Stock was 3 years away from withdrawal. It*

The F Stock was also used on the East London Line (ELL), but it didn't get there until late in 1953, more than two years after it entered service on the Metropolitan. This was because a float of trains was needed while the stock was being refurbished at Acton. Just before the stock entered service on the ELL, some training runs took place between Hammersmith (Met.) and Edgware Road between 23 November and 5 December 1953. These were for those crews working on the H&C who also covered the ELL.



*Fig. 17: A 4-car set of H Stock on the East London Line about 1950. The usual formation (M-T-T-M) seen here comprises two 1910-11 motor cars with two 1931-35 trailers between them. Careful examination of the original photo shows that the trailers have been through the first stage conversion to Q Stock, having been fitted with e.p. brake and air-door equipment but they are being retained in the H Stock fleet until required to replace Q38 trailers sent away for conversion to R Stock. It must be a rather warm, if dull day, as most of the train doors have been left open. As mentioned in last month's article, F Stock should have appeared on the ELL early in 1951 but, because of the rehabilitation programme, H Stock continued to work on the line until towards the end of 1953.*

## COUPLERS

Until the arrival of the R Stock, the District continued to use the Ward coupler it had adopted in the early days of electrification (Fig. 18). It was automatic, but only in the sense that if you lined up the two coupler heads and drove one car gently<sup>4</sup> into the other, they would couple. However, since this was only a mechanical connection, it was necessary also to manually couple the two air hoses and connect the three control jumpers and the power busline every time cars were coupled. There was also a pair of safety chains to hook up. The coupling process was a tiresome and slightly risky operation, requiring staff to be on the track with live rails, and it led sometimes to mistakes being made with connections and to damaged pins, drawbars and coupler heads. It was a source of failures and an expensive maintenance item. It was only the introduction of the O and P Stocks in 1937-38 that saw the appearance of the new Wedgelock automatic coupler. This provided for mechanical, electrical and pneumatic connections to be completed all in one operation with the push of a button in the cab. It was not without its problems, being a complex piece of kit and requiring pneumatic and electrical controls to synchronise, but it did help to speed up coupling and uncoupling and it got the staff off the track. Whether it saved any maintenance costs is questionable but it was, once the initial bugs had been got rid of, reasonably reliable if used regularly. The Wedgelock coupler was only provided at those positions on a train where uncoupling was required on a regular basis, normally at the outer ends of units.



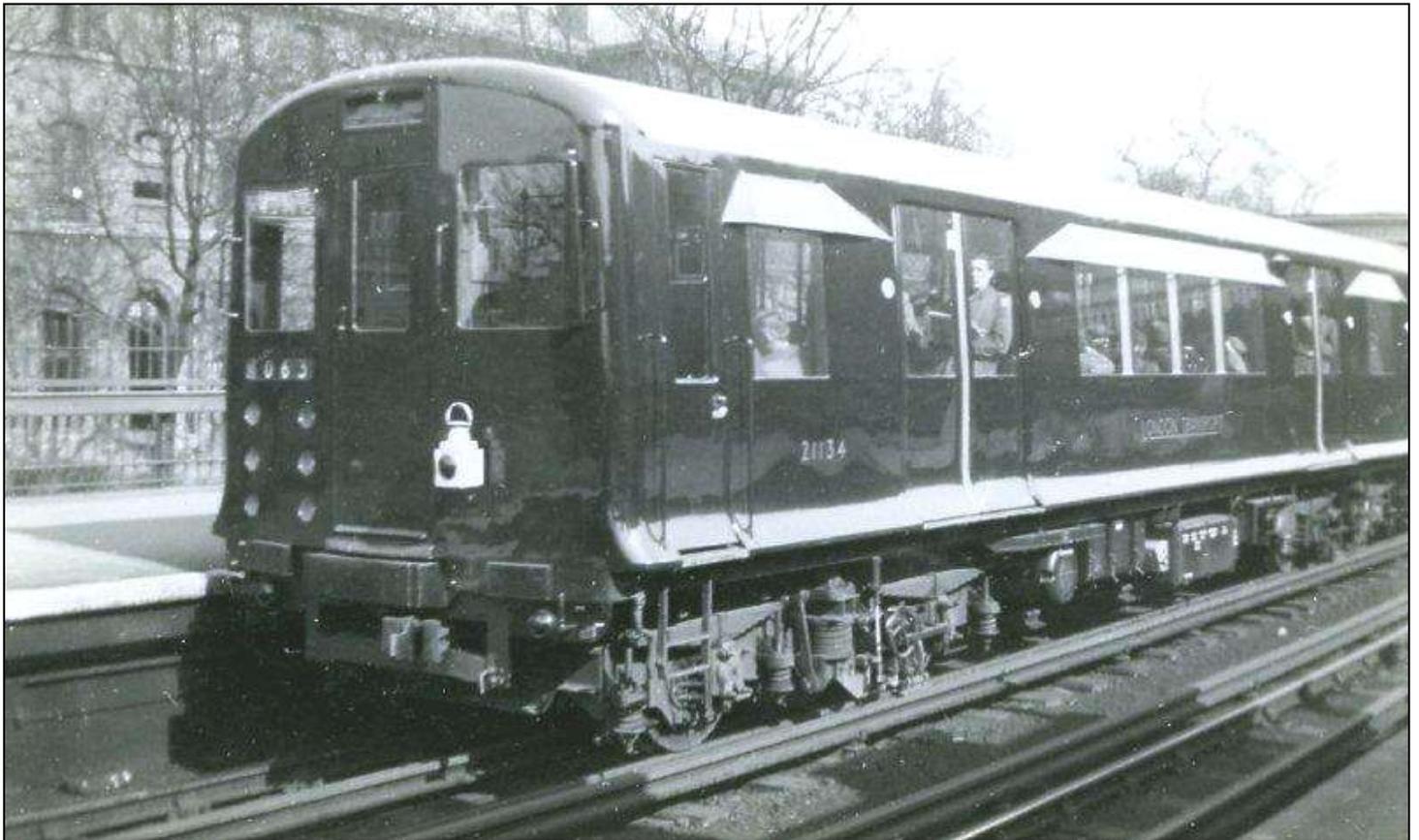
*Fig. 18: When not working on the East London Line, H Stock continued to appear regularly on the Putney shuttles. This train of H Stock at Putney Bridge sometime in the early 1950s is led by C Stock motor car No.4059. The off-peak Putney "locals" as the District used to call them, were normally 4-car sets during the off-peak and continued to be so right up until the October 1964 timetable change. This photo also shows the Ward coupler at the east end modified with the shroud.*

Intermediate couplings on such trains were fixed or "semi-permanent" as they were called officially. You had to get the cars over a pit to disconnect them. These couplings and their jumpers and hoses

<sup>4</sup> The word "gently" was subject to broad interpretation, so that there were occasions when coupler shanks were bent or broken due what was usually referred to as a "rough shunt".

were normally left untouched unless cars were lifted. The O, P and R Stocks all had this arrangement but the stocks differed in their arrangement of hoses. The O/P Stocks had their hoses below the floor, while the R Stock cars had theirs at waist level, like earlier District cars. I suspect it was because they wanted to retain the ability to isolate individual cars in the event of an air burst. At some stage after the Second World War, probably starting in 1949, the Ward couplers at the east end of cars had a shroud fitted (Fig. 18) to try to prevent incidents of accidental uncoupling in service. The worst location for such problems was Whitechapel, where the combination of sharp vertical and horizontal curves within a cramped site provided severe stresses for both bogies and couplers. The problem at a place like Whitechapel was that the coupler on one car could, under extreme movement, slide up and disconnect from the coupler on the next car.

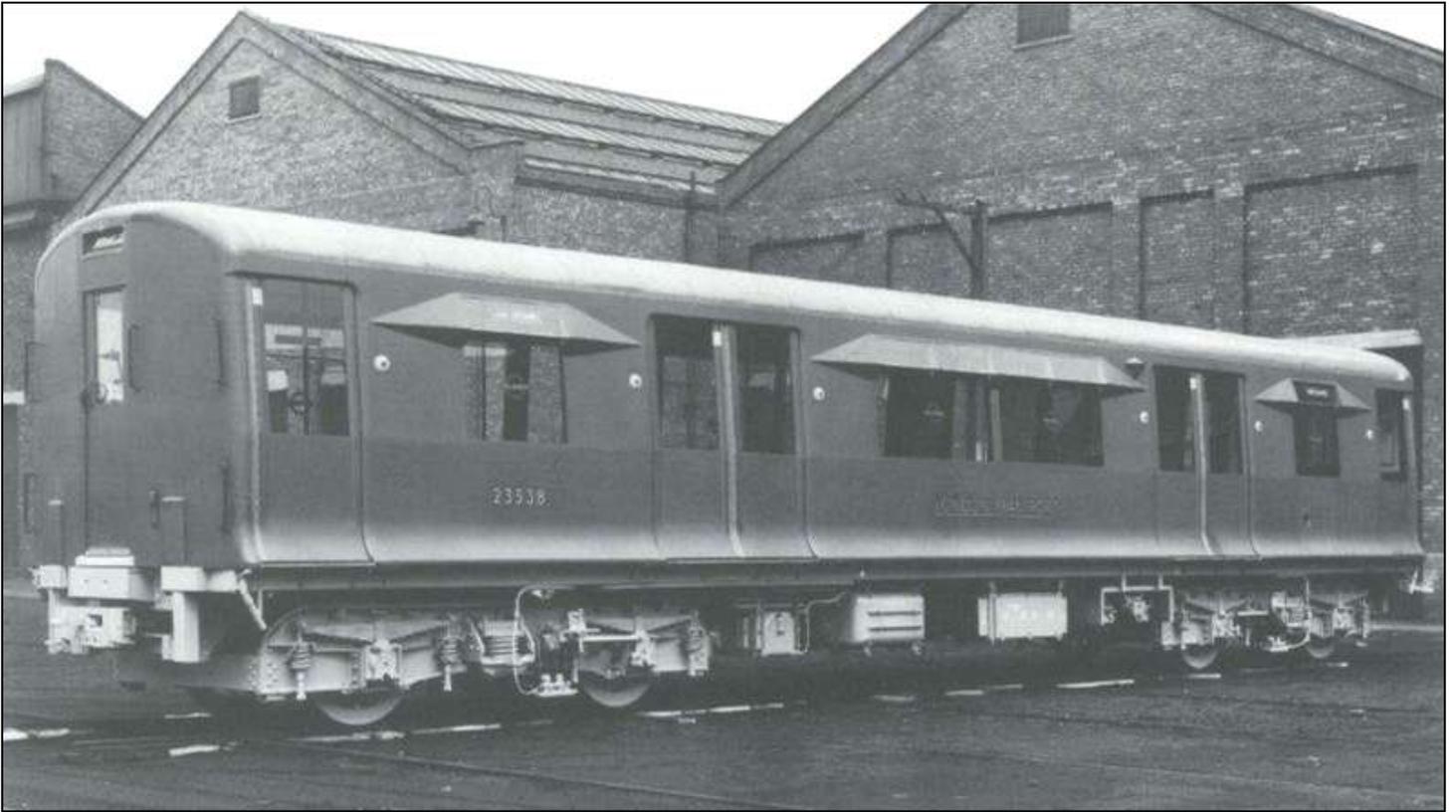
## R STOCK INNOVATIONS



*Fig. 19: Newly converted R38 Stock driving motor car No. 21134 at the rear of a train at Bromley (now Bromley-by-Bow) going to Upminster. Judging by the cleanliness of the underfloor equipment, the photo was taken not long after the car went into service in March 1952. It has the train set number 063 in an illuminated box where the destination plate was on older cars and the destination display in a roller blind box at the top of the offside window. Although not used at the time, the passenger door open buttons are clearly visible either side of each doorway. The door fault light is just next to the second pair of doors. A Ward coupler is provided on the west end of this car. It wasn't normally required to couple to anything so the expense of an automatic coupler was saved. The shoe gear is of the original retractable type and is easily recognised by the lack of the usual wooden shoebeam attached to the axle ends. There were a number of versions of this arrangement and it was eventually replaced by conventional shoebeams.*

The introduction of R Stock saw a number of features new to the Underground, including all-motor car train formations, fluorescent lighting, roller blind destination indicators, retractable shoe gear, trigger switches for crew controls, key operated door controllers and door fault lights.

We will look at these in more detail in future articles but to get a flavour for the main visual changes, I have selected a photo (Fig. 19) which shows the original appearance of a newly converted R38 car and another (Fig. 20) showing a new R47 NDM (No. 23538) at the Birmingham Railway, Carriage & Wagon works before dispatch to London.



*Fig. 20: A specially posed view of R47 NDM car No. 23538 at the builder's works just before dispatch to London in April 1950. It shows the new design of toplights and their covers and the revised layout of windows and doors compared with the R38 arrangement. The end nearest the camera is provided with a Wedgelock automatic coupler and additional grabrails near the floor level. This was the end which would couple to a 4- or 6-car set as required to make up the train. Since, with auto-couplers, the crew wasn't supposed to have to get down on to the track, the extra grabrails might seem to be superfluous but, it was sometimes necessary to line up the couplers before coupling and this could only be done by manhandling them, into position from track level. The outlines of the two big, vertical anti-collision pillars can also be seen at the car end. The underfloor equipment is painted grey to allow it to show clearly in the photo. Immediately after the leading bogie is the Westinghouse DHC2 compressor and, if memory serves me correctly, then the e.p. brake case, the auxiliary contactor case and the shed receptacle. The traction equipment was on the other side of the car.*

**To be continued .....**