THE CENTRAL LONDON ELECTRIC TRAIN
7 – WOOD LANE DEPOT
by Piers Connor

THE SITE

The Central London Railway depot was built at Shepherd's Bush, between Wood Lane on the west side and the West London Junction Railway on the east side. An area of 20 acres was compulsorily purchased by the CLR in 1896 to provide the land for the depot and the power station. At the time, there were a number of large houses and gardens fronting on to Wood Lane, with names such as Eynam House, Beaumont Lodge and Wood House.

Wood House is said to have existed in one form or another on the site since the 17th century. It was, for many years, owned by the Bridge family[1]. They seem also to have owned some of the land upon which the other houses were built. One known member of the family was John Bridge, a wealthy and successful goldsmith based in Ludgate Hill, who died in 1834. He was unmarried, so the house and its large and beautiful gardens, passed to his brother George. In 1889, the family fortunes must have taken a turn for the worse, since it was decided to convert the land into what we would call today a "theme park". It was renamed "Woodhouse Park" and the gardens were endowed with a life-sized model of Stonehenge, and opened to the public with music festivals, bazaars and industrial exhibitions. It proved a commercial failure but the theme park idea was to resurface some years later, as we shall see.

Eynham House was originally a farm house, whose owners worked much of the land between the rear of the domestic gardens and the West London Junction Railway. The Hammersmith & City Railway crossed Wood Lane just to the north of their farm house and ran along the northern border of the farm. By the time of the CLR purchase, this part of the farm had been given over to brick manufacture and the area was, shortly afterwards, taken over by the Kensington Borough Council as their depot. On the east side, there was a small coal yard, but this had to be expanded to accommodate the wagons needed to supply coal to the Central London's boiler house. Within four years, the whole area had gone from being a few rural estates to a full-blown industrial site.

THE DEPOT TAKES SHAPE

Work on clearing the depot site seems to have started early in 1898 and, by mid-May of that year, foundations for the power house and sheds were being laid[2] and the tunnel entrance ramp had been formed, although Ordnance Survey maps of the time suggest that not all the former domestic buildings on the site had been demolished by then. On 15 February 1899, at the company's half-yearly meeting, the Chairman, Sir Henry Oakley, reported that the buildings at Wood Lane were "substantially complete"[3] and in mid-March it was reported by the London Daily News that the workshops were already having engineering equipment installed[4]. This report also described the power station and boiler house in some detail. In it, the reporter made reference to the company using the finest equipment because of their "having plenty of money". Of course, it didn't last.

By October 1899, most of the work on the buildings seems to have been finished. According to the London Standard of 6 October 1899, there was a single "enormous" carriage shed and, next to it, "a large open space for washing and cleaning of the rolling stock". The carriage shed had 12 roads, each capable of accommodating one train.

The open car cleaning area was to prove a mistake. Quite why they thought they could clean the cars satisfactorily in the open escapes me. Although it may seem a simple task, in those days involving a bucket and brush since they didn't have drive through train washing machine then (the first on the Underground was installed at Ealing Common in 1928), it wouldn't have been much fun in

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1 There are a number of references to the Wood Lane site in the Newsletters of the Hammersmith & Fulham Historic Buildings Group. These are available on line at: **http://www.hfhbg.org.uk/downloads.htm**

2 Leicester Mercury, 14 May 1898, page 3.

3 London Standard, 16 February 1899, page 7.

4 The London Daily News, 14 March 1899, page 5.

the winter. If it became frosty, the water would freeze on the car sides and the windows would have been completely frosted over[5]. It wouldn't have been plain sailing in the unreliable English summer either. "About 1902", according to Jackson & Croome in "Rails Through the Clay"[6], the CLR realised their mistake and the cleaning area was provided with covered accommodation in a style similar to the existing 12-road inspection shed. This provided another 12 covered roads, which allowed all the 24 original trains to be stabled under cover.

THE ORIGINAL LAYOUT

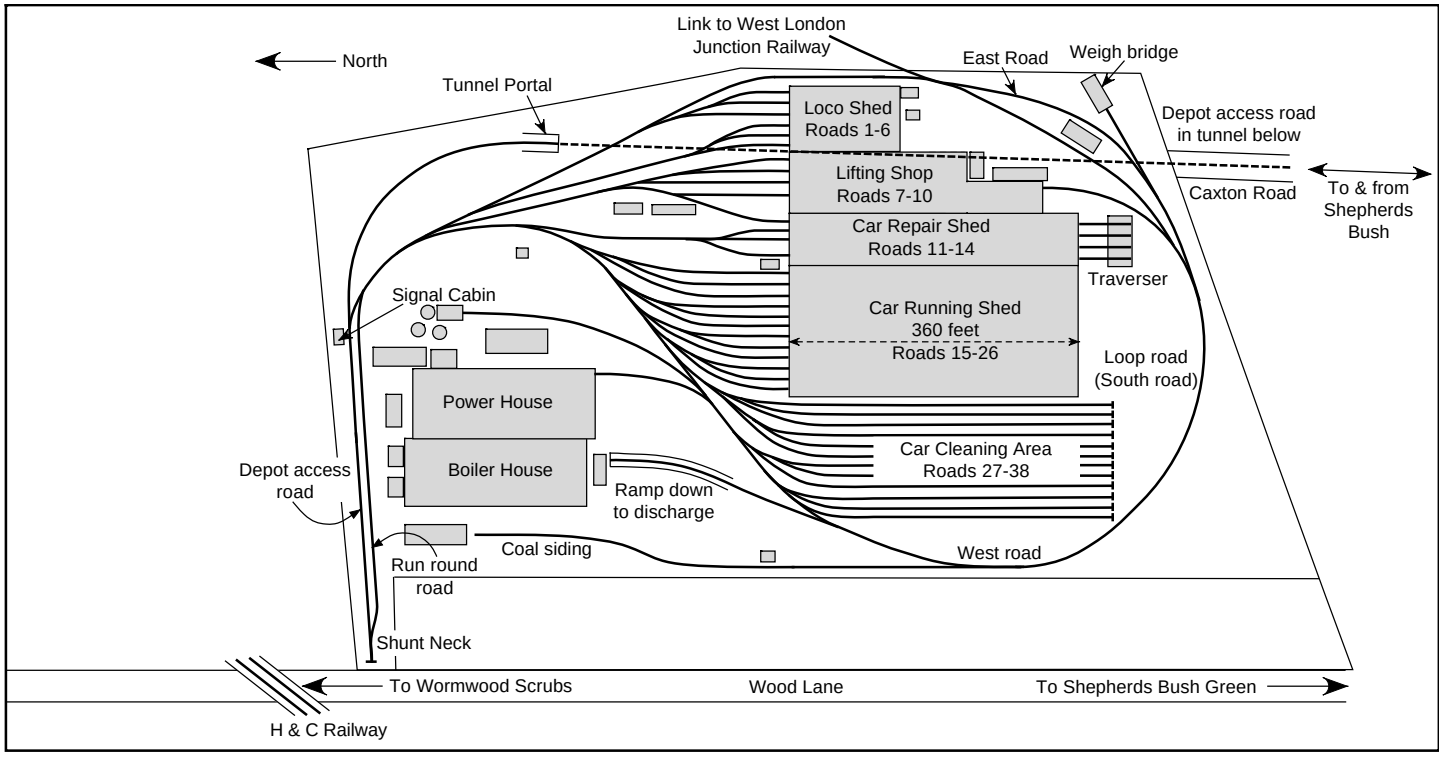

Figure 1: A plan of the CLR's Shepherd's Bush depot on Wood Lane using contemporary drawings, maps and photos. According to a sketch published in 1900, the original site did not fully front on to Wood Lane. An early Ordnance Survey map shows one or two of the original buildings still in place on the Wood Lane side of the yard. Drawing by Author.

As built for the opening of the line in 1900, the depot was laid out as in Figure 1. Trains entered the depot on an access road up a 1 in 45 gradient to the tunnel portal, where the line curved sharply west and ended in a siding with the buffer stops adjacent to but at right angles to Wood Lane. A run round loop was provided next to this siding and the connection to the depot was made at its east end. Any train entering the depot could only do so by reversing in this siding. A signal box was provided at the exit to the siding to control movement in and out of the depot and over the block section towards Shepherd's Bush.

The main depot buildings consisted of a power house, loco shed, workshop and carriage sheds. Today, only the power house has survived, largely as a result of it being retained for many years as a testing house for the Underground's Chief Electrical Engineer and it is now part of the Westfield Shopping Centre bus station. Some might be tempted to say this was an insult, given the intense rivalry between bus and Underground services over the years, but at least it provides a useful way of preserving the listed structure.

The power house provided the main high tension feeds for the sub-stations along the line and, as coal fired boilers were used, it needed a siding for fuel storage. A single track ramp was provided down to a discharge point below the main building. In order to provide rail access for coal delivery, a single track connection was laid to the West London Junction line, which was also used for rolling stock delivery.

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5 This problem explains why trains look dirty during cold weather. External washing is often suspended to prevent the water freezing on the car exteriors. It effectively freezes the doors shut and prevents the train going into service. Ideally, all train stabling should be under cover – it's expensive in first cost but worth it in the long term.

6 Second edition, Capital Transport Publishing, 1993, page 39.

The entrance siding, which was orientated in an east-west direction, was connected through a sharp curve to fans of sidings running in a north to south direction, most of which led into the various depot buildings. The easternmost siding was laid outside the buildings and was extended to form a loop which ran all the way round the depot and connected with the western side of the main fan of sidings. The eastern side of this loop was where the connection to the West London Junction Railway was provided. In later years, trains that travelled round this loop were said to be 'going round the farm', seemingly a reference to the site's original use.

Next to the 'East Road', the name given to the eastern part of the loop, was the locomotive running shed. This was a six road shed, some 140 feet long, which was just large enough to accommodate all the 28 electric locomotives purchased by the Central London. These roads were known as No.1 Shed to No.6 Shed. Next to these were two roads which ran into the Machine Shop, where such work as armature rewinding took place. Two more roads, Nos. 9 and 10, were in the lifting Shop, where overhead cranes and a traverser were provided. No.9 road was extended to the south end of the shop and continued on to connect with the depot loop road.

Nos. 11 to 14 roads formed the carriage repair shop. This was a 360ft. long shed which had a carriage traverser connected to all four roads at its south end. Photographs of the Central London locomotives under construction apparently show this shed, which was probably used for this work while equipment for the locomotive and lifting shops was being installed.

When the line was opened to public traffic in July 1900 only the depot entrance road and the tracks leading up to the loco running shed were provided with a current rail. Shunting in any other part of the depot was by means of the two steam locomotives owned by the Central London. The original locomotive hauled trains had to be shunted back into the sheds from the siding. The procedure for doing this is not entirely clear but documents from the period suggest that it was usually done by fly shunting the train. When a train arrived in the siding, the locomotive was uncoupled and it then pushed the train back until it had sufficient speed to let it coast into the shed, where it was stopped by the guards using the handbrakes. This was done because there were no current rails in the yard, except on the tracks leading into the loco shop.

Exactly how trains were got out of the sheds is not known but a reasonable guess must be that a steam locomotive was used to drag the carriages to the shunting neck and then an electric locomotive was driven from the loco shed to the other end of the train, where it was coupled, ready to take the train into Shepherd's Bush. This must have been a slick operation in the mornings, when they would have to get trains out roughly every five minutes during the build-up to the morning peak. I could see both steam locomotives being required to do this. The depot foreman must have heaved a sigh of relief when they got rid on the locomotives.

Problems with the use of steam locomotives for moving trains around the depot must have been foreseen since, just before the line opened, a scheme was drawn up to provide overhead trolley wires for the whole depot. These were installed by R.W. Blackwell & Co. late in 1900, according to the board minutes. At least one of the electric locomotives, No.4, and probably another one, were fitted with a pair of trolley poles, one either side of the central cab. The result was visually rather ungainly but these locos could now perform the same shunting movements as the steam locos. The overhead wires seem to have been continued into the car sheds and the loco running shed, but not into the machine and lifting shops.

With the introduction of a full service of multiple unit trains in 1903, it was realised that trains could be moved around much more easily if current rails were available – outside at least – so the overhead wires were gradually replaced by current rails throughout the open sections of the depot. By 1908, the wires had all gone but many of the original support masts remained were retained as lamp standards to light the outside areas of the yard.

The installation of the overhead wires and their subsequent removal only a few years later provides another example of the huge amount of retrofitting and alteration that took place on the Central London during its early years. With the abandonment of the locomotives, the building of an additional car shed, the installation and removal of overhead wiring and some substantial alterations to the original power supply, there was considerable additional investment in the railway on top of its original building costs. That it was driven by the belief that the route through the West End to the

City was a real money spinner and that the promising early fares income would grow, there is no doubt. The investors were expecting a good return. As we have seen in previous articles, they were to be disappointed. New, parallel bus services and the electrification of the Circle Line were to prove serious competition from 1906 onwards.

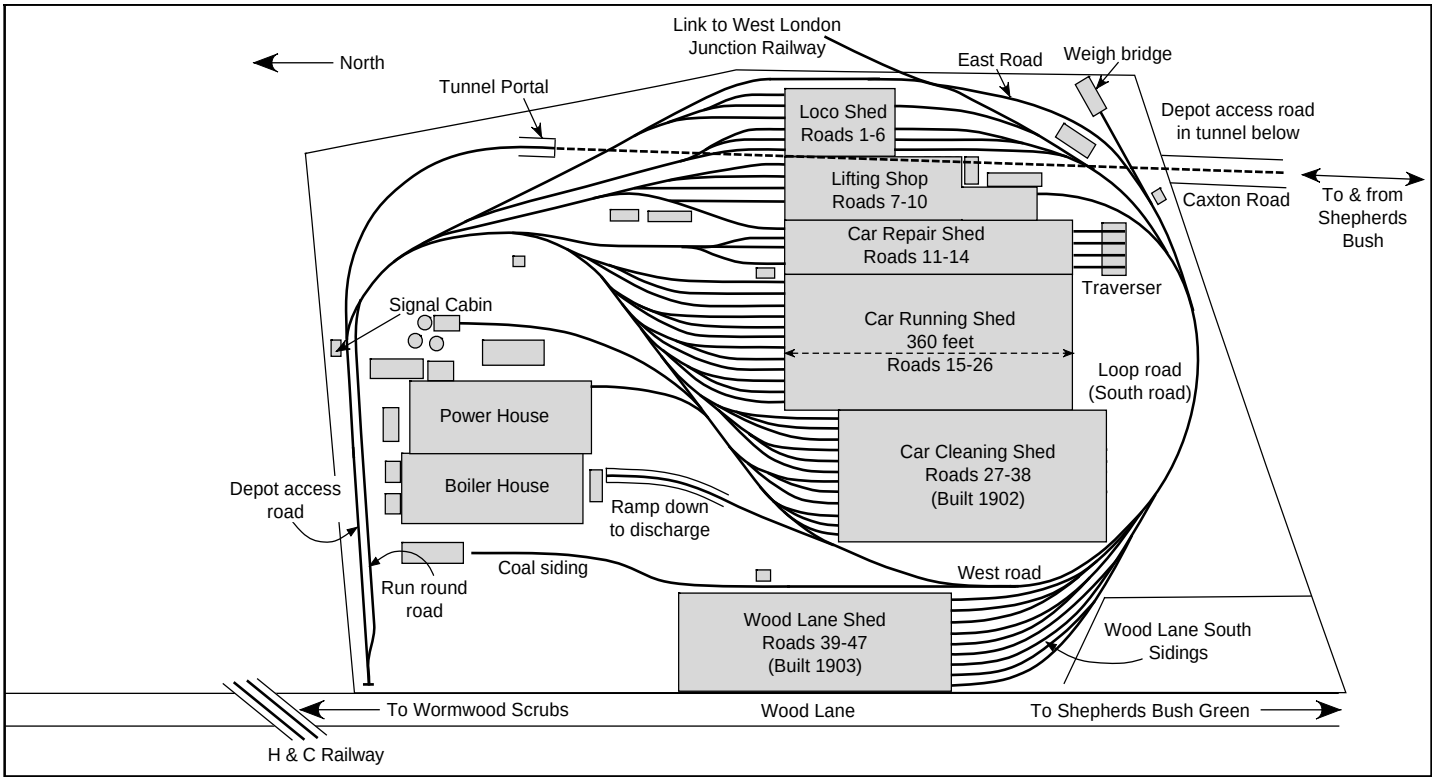

Figure 2: Wood Lane Depot in 1903 after the installation of the Wood Lane Sheds. These were added to provide the extra accommodation needed for the eight trains added with the introduction of multiple unit traction. Drawing by Author.

EARLY ALTERATIONS

The depot layout didn't remain in its original state for long. Apart from the addition of the shed to cover the cleaning roads in 1902, there were further changes in 1903. The original accommodation of 24 train stabling roads, each capable of taking a 7-car train, allowed room for all the 168 trailer cars owned but, with the arrival of the 64 new motor cars in 1903 and the consequent increase in the number of trains, more accommodation was needed, so a new car shed was built on the west side of the depot. In recognition of its location next to Wood Lane it became known as the Wood Lane Shed (Figure 2).

Nine additional roads (Nos. 39-47) were provided in the new shed but they could only be reached via a fan connected to the south side of the loop road. Curiously, the fan into the sheds was known the "Wood Lane South Sidings". It was an odd way to describe it since the tracks weren't sidings in the accepted meaning, they merely formed an access fan for the shed roads. Trains requiring to enter these sheds could only do so by running round the depot loop road or by running past the car cleaning sheds on the so-called West Road and onto the South Road and then reversing to get to the Wood Lane South Sidings. The new sheds were provided with pits, like those in the car running sheds.

With the loss of most of the electric locomotives, the loco running shed was reduced in size to three roads (Nos. 4-6), while the other three roads (Nos. 1-3) later became the paint shop. At some time before 1914, the loco roads were extended through the south end of the shed to connect with the loop road, as was No.2 road of the paint shop. To the rear of the paint shop a connection from the loop gave access to a weigh-bridge.

THE WHITE CITY

In 1906, while the Central London was in the process of settling down to multiple unit traction, trying to find ways of protecting their already flagging fare income and, as we've seen, getting the hang of

how to run a railway depot, things were beginning to happen across the road. On the other side of Wood Lane from the depot, just to the north west of the Hammersmith & City viaduct, was a large area of open land, some of which was being used for brick making to supply the rapidly enlarging suburbs of West London and perhaps even the construction of the depot. This land was chosen, in 1906, as the location of a large, purpose-built, "theme park" known as the Franco-British Exhibition. This was an order of magnitude bigger than the 19th Century theme park put in the garden of Woodhouse Park by the Bridges estate. An agreement for a joint, specially constructed, showpiece display arena had been signed with the French in 1906 and the land at Wood Lane was earmarked for the exhibition. The exhibition was to be built by Imre Kiralfy, a Hungarian-born entertainer and entrepreneur who had latched on to the then current craze for these sorts of extravaganza and who had a world-wide reputation as an exhibition organiser. When it was completed in 1908, the final finish of the exhibition buildings was in a white stucco and this led to site becoming known as the "White City", a name that has stuck ever since.

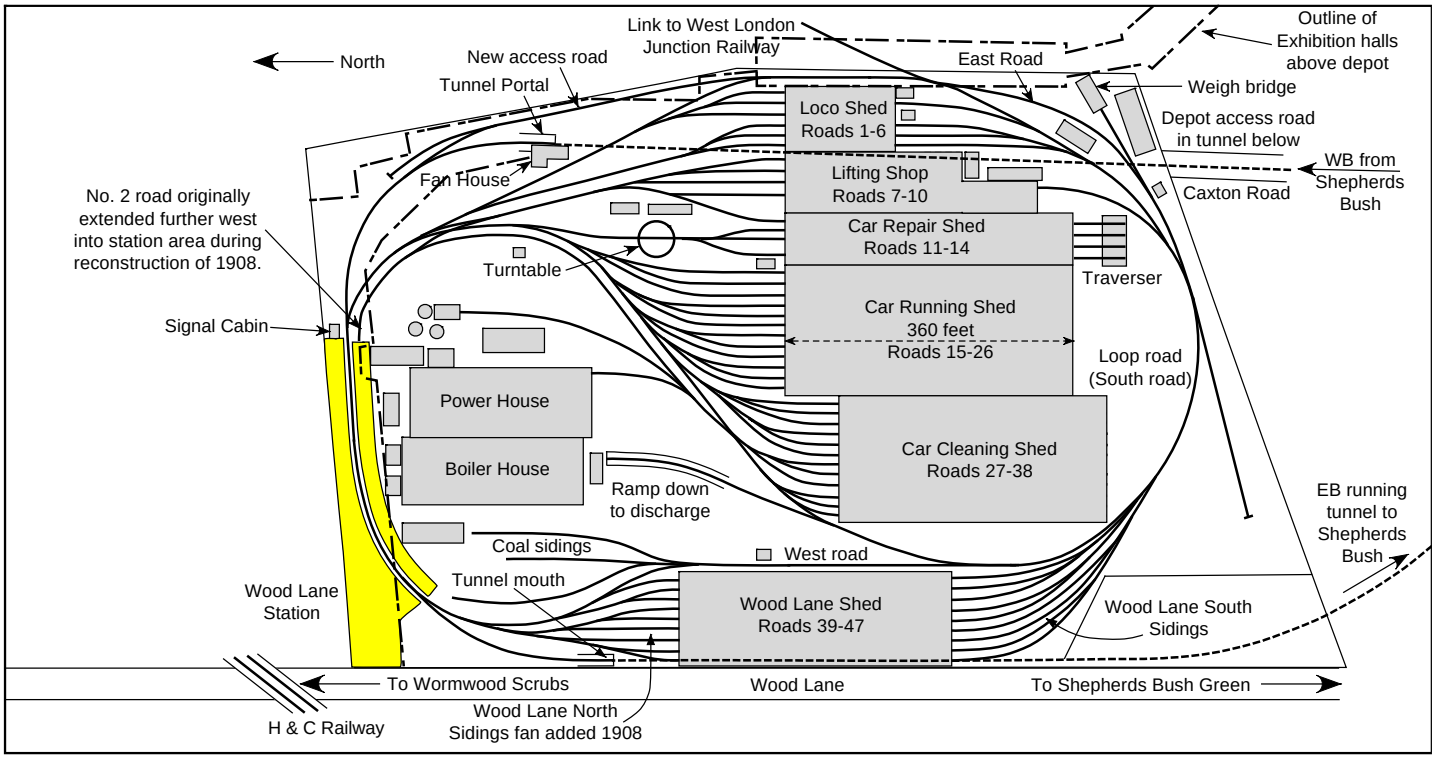

Figure 3: A plan showing Wood Lane depot in 1908 showing the new Wood Lane station and its connections to the Wood Lane Shed known as the Wood Lane North Sidings. Also shown is the connection between the station and the new tunnel mouth for the running line passing under the Wood Lane Shed and on to Shepherd's Bush. The outlines of the exhibition halls erected over the eastern and northern sides of the depot are included and, by this time, a fan house had been built over the original tunnel entrance to assist with the ventilation of the railway. A turntable was also provided on the road leading to the car repair shed and a new access road between the station and the eastern side of the depot loop was added. A new shunting neck called No.2 road was added to allow temporary access to the main sheds during the construction of the station. It was cut back to the position shown in this drawing when the station was completed. Drawing by author.

Work on the site started in January 1907[7] and the Central London, realising that there was a chance to recover some of the income lost to bus operators, decided to build a special station to serve the exhibition. They quickly obtained parliamentary powers, in July 1907, to build a new station that they, rather unimaginatively called Wood Lane and to construct an extra line, in tunnel, to connect the new station with the original terminus at Shepherd's Bush.

The station was to be built on the site of the depot entrance siding, which had to be rebuilt to allow it to connect to the new tunnel, which was to pass under the Wood Lane Sheds and then turn east to join, end on, to the existing tunnel siding at Shepherd's Bush (Figure 3 above).

[7] There is a lot of information available on the internet about the exhibitions, the site and Kiralfy, e.g. – **http://www.studygroup.org.uk/Articles/Content/My%20Reminiscences.htm**

The idea was simple in theory, but rather more complicated in practice. The depot entrance siding had to be realigned and lowered, and then connected, at the Wood Lane end, to the new single track tunnel running under the Wood Lane Sheds.

The first alteration took place late In March 1908[8], when the depot entrance siding was re-aligned to fit between the planned new platforms. This involved lowering the track by about 6ft. and connecting the Wood Lane end of the siding, by a very sharp curve, to the depot. This new connection to the depot was made necessary because the original depot connection at the east end of the entrance road had been temporarily removed because of the track lowering work.

The new connection ran round to the east side of the Wood Lane Shed (since it was on the west side of the yard, it was called the West Road) and then joined the South Road (Figure 3 above). For the next few weeks all movements to and from the depot had to be made by way of this connection. In order to get to the Wood Lane Shed, trains ran via the West Road to the South Road, reversed and then moved into the sheds via the Wood Lane South Sidings. To get to the original sheds, trains also had to reverse on the South Road then proceed past the carriage sheds to a new shunting neck put in next to the original depot connecting line. The new shunting neck was known as No.2 road. Another reversal allowed access to roads Nos. 1-38. This road was cut back to accommodate the new platform when the station was completed.

WOOD LANE STATION

Because the new station, which had a platform on either side of the single track, was built at a lower level than the original depot entrance road, there was now a steep gradient up towards the sheds for trains moving from the station to the depot. A completely new fan was also put in to give access to the Wood Lane Shed from the west end of the station. The fan was known as the Wood Lane North Sidings.

The Wood Lane end of the station track had a 300ft. radius curve so the depot entrance road, which diverged inside this curve, was even sharper.

Movement in the depot was, not surprisingly, restricted to 4 mph, although how crews were expected to adhere to this when trains were not equipped with speedometers, I cannot imagine.

At such a speed, a train going into the depot would take over a minute to clear the platform exit route. This would have been rather too long if they were operating a two-minute service and I would guess that the 4 mph was regarded more in the breach than the observance.

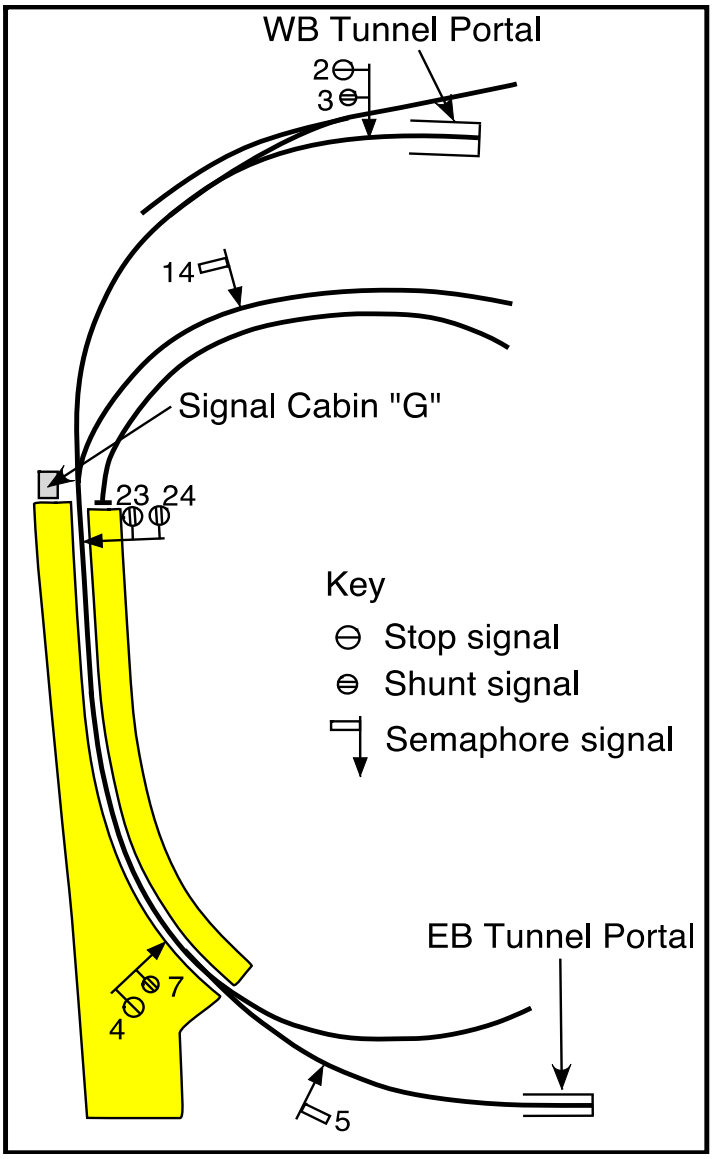

Figure 4: Plan of Wood Lane station showing the location of the principal signals as they were in 1913 when the line was resignalled with AC track circuits. Most of the signals were colour lights but some of the signals located outside the covered areas were semaphores. The westbound starting signal (No.4) has to be cleared before a train arrives to stop in the station. Signal 5 acts as an advanced starter and trains were not dispatched from the platform until this was cleared. Unusually the platform repeater showed aspects for both starter and advances starter. Trains that were to enter the depot from the east end of the platform had to draw forward to free the route past Signal 24. Drawing by author based on a signal plan dated November 1913.

[8] The date is from various notices issued to staff at the time.

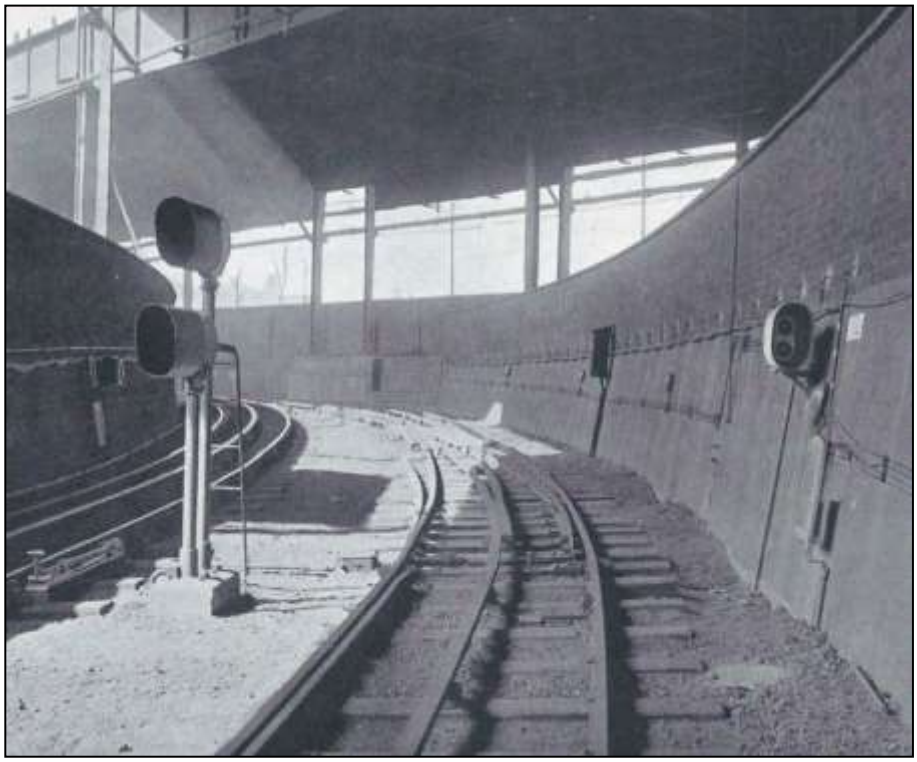

Figure 5: A photo of the rail entrance to Wood Lane depot showing the new signals installed as part of the 1913 resignalling. The double signal on the left is for trains coming from Shepherds Bush approaching Wood Lane station from the tunnel. The top signal is G2, the inner home for the station. The lower signal is a shunt signal. The camera is positioned on the "East Road", the points seen here providing a connection to the station on the left. The route ahead leads to a short siding. Note the overhead structure supporting the exhibition halls. The home signal has a trainstop but, strangely, none is provided for the signal on the right, even though it allows trains onto the main line. The hoods on the signals were an attempt to reduce glare from the sun but they severely restricted sighting when trains were drawn up and did not last long. Photo: Railwav Gazette.

The desire to allow trains to enter the depot from either end of the platform made the connections very tight, so tight in fact that it was impossible to get a 6-car train between the points at each end of the platform. The westbound starting signal for the platform track (Signal No.4 in Figure 4) had to be positioned almost 20ft back from the end of the platform so that it could protect the points leading into the depot. This signal had to be cleared before any train could enter the platform from the east. If the train was going into the depot, the shunt signal working in conjunction with the starter (Signal 7) had to be released by the shunter before the train arrived. The preference was to use the east end entrance as this avoided two reversals in the depot to obtain access to the old shed roads Nos. 1-37.

It was soon found that the depot loop road was useful in helping to restore services to normal after late running. A train entering Wood Lane station late from Shepherd's Bush could be diverted into the yard instead of making its next scheduled trip to Liverpool Street and back. The driver was told to 'go round the farm' and wait by the fan house, which was next the tunnel mouth. When it was time for his scheduled return from Liverpool Street he would be called up to the exit signal (G14) and signalled into the platform so that he could start his next trip on time.

The connection to the new tunnel was made with the re-laid platform track and the new station opened on 14 May 1908, the opening day of the Franco-British Exhibition. As part of the exhibition facilities, a series of halls were built on a steel structure around the eastern and northern perimeters of the depot. The entrance to the halls was next to the Central London's Shepherd's Bush station. The outline of the halls is shown against the depot plan in Figure 3 above.

Figure 6: The advance starting signal at Wood Lane station on the curve leading to the Eastbound tunnel. The semaphore signals were pneumatically operated, as they were on the other Underground lines (except the Metropolitan of course) and they were upper quadrant as shown here. This photo also shows, in the background, the fence separating the depot from Wood Lane and part of one of the more exotic structures of the original Franco British Exhibition. Photo: Railway Gazette.

CURVES AND DIPS

While all the visible stuff was going on at Wood Lane, other, less visible things were happening further east, near Shepherd's Bush.

The new loop tunnel from Wood Lane had to be connected to the end of the original reversing siding at Shepherd's Bush. To do this, it had to pass under the existing, sharply curving depot access road. While I was looking at the scale plans for the area, I noticed some oddities that showed that some quite difficult work must have been done to make the connection.

First we should remember that the original siding had to be at least 350 feet long in order to accommodate the original 7-car train plus its locomotive and that it would have to be level, or nearly so, in order to allow trains to be left there without rolling away during the locomotive changes[9]. However, the current scale plans of the route show that the eastbound road has a sharp change in gradient about 256 feet along the siding, almost 100ft short of the end of the original siding. It drops at a gradient of 1 in 34 from its original gradient of 1 in 2,750. It has to do this to allow it to pass below the sharply curving westbound road (Figure 7). Incidentally, the westbound is the sharpest running curve on the Underground system. The curve has a 200 foot radius (60m) and was to become notorious for its restriction on the standard tube loading gauge. It is known as the Caxton Curve, from Caxton Road above.

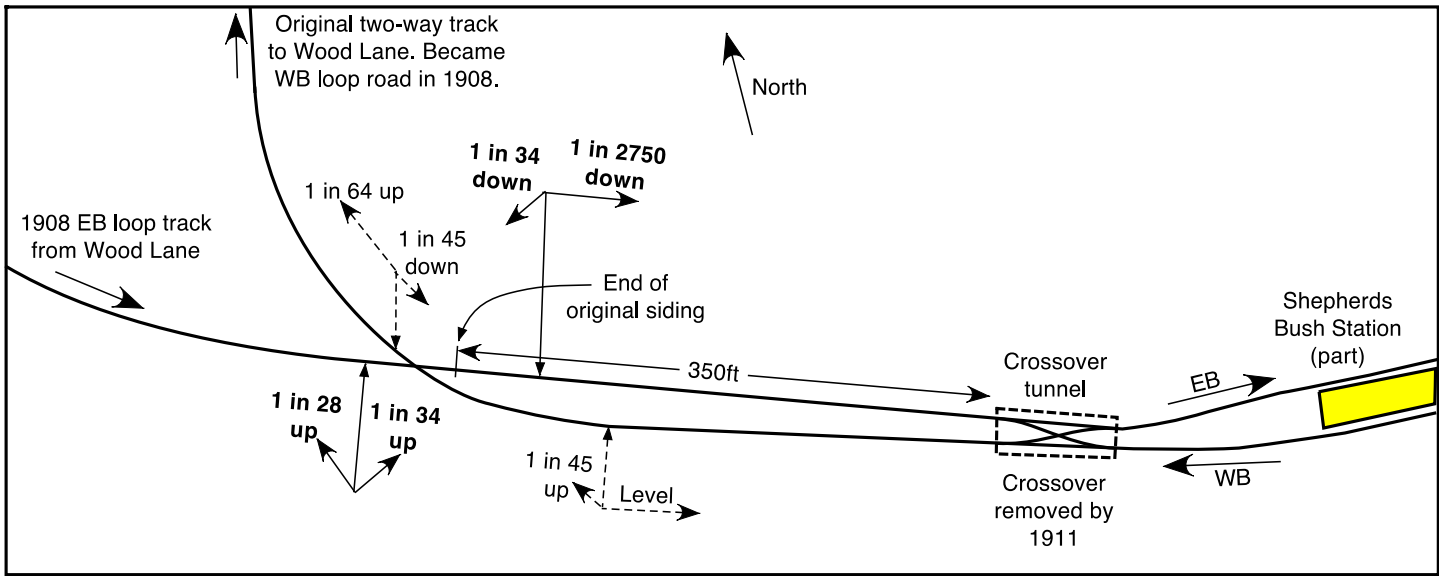

Figure 7: A diagram (generally to scale by tracing) of the tunnels west of the Central London's Shepherd's Bush station in 1908 after the building of the new station at Wood Lane and the installation of a terminal loop. As a result of the changes, the original, bi-directional, depot access road became one way for westbound (WB) trains only. The gradients on this road are shown with dotted lines. The new eastbound (EB) side of the loop was provided by connecting it to the west end of the original reversing siding. Its gradients are shown in bold type. The new arrangement had the effect of crossing the two tunnels at just about 400 feet west of the original crossover tunnel at Shepherd's Bush. The EB road had to dip below the original depot access tunnel that had become the WB side of the loop. Note that the original siding was 350 feet in length but the gradient changes along its length. Close examination of the gradient changes in the area where the tunnels cross show that the last 50ft of the siding had to be re-tunnelled to create a 1 in 34 gradient so that the new line could pass under the original tunnel. The diagram is based on original published drawings and some more recent official scale drawings. Drawn by the author.

Returning to the siding and the sudden droop at its west end, it seems very unlikely that it was originally constructed that way. Why would it be? The original promoters had no idea that Imra Kiralfy was waiting in the wings with a roll of plans labelled White City tucked under his arm, so they had no need to think about a new station, a loop or a change in the level. It would have made uncoupling the locomotive very difficult too. For me the obvious answer is that the gradient change had to be built in for the new connection. This must have involved a lot of hand digging under the existing siding and if the siding had to be taken out of commission while the work was going on, it wouldn't have been too difficult to reverse trains in Shepherd's Bush station. At the time, there was a crossover at both ends of the station.

The final profile of the new loop, describes a long downhill run at 1 in 37 from a short distance outside the tunnel entrance, steepening to 1 in 28 at the start of its 125m radius curve towards the

[9] A sensible railway does not allow its sidings to be built on gradients or curves if at all possible. Gradients present a runaway risk while curves make coupling a nightmare.

east until just before it reaches the westbound tunnel, when it suddenly goes up at 1 in 34. It actually begins to rise before it passes under the westbound tunnel. A strange solution, you might think, that may have been by chance or, perhaps they realised, when they got that far, that they were more than deep enough to get under the westbound tunnel and decided to go upwards.

To be continued ……