

150 YEARS OF LONDON UNDERGROUND

by Mike Ashworth

**A report of the LURS meeting at All Souls Club House
on Tuesday 10 December 2013**

Mike Ashworth is the Design and Heritage Manager of London Underground. He had found condensing 150 years of history into about 45 minutes a difficult proposition so the aim of his talk was to give a “romp” through the LU story and concentrate upon the milestones.

WHY WAS AN UNDERGROUND BUILT AT ALL?

The layout of central London is based upon its medieval street pattern and even the Great Fire, and Sir Christopher Wren’s subsequent rebuilding plans, had done little to change this over the centuries. By the mid-1800s London had become a densely populated, and congested, city. The original main line railway terminals had largely been prevented by legislation, and property acquisition problems, from serving the centre of town, so there was a need for transport to take customers from this ring of stations onwards to their destinations

Initial ideas for congestion relief included:

- Pedestrian bridges and high level walkways.
- Tunnels for road freight transport (John Evelyn).
- Rail lines on viaducts with shops below.

Charles Pearson, Solicitor to the City of London, is seen as the “father of the Underground”. He was personally interested in transport as well as social reform (slum clearance, social mobility for workers, etc.). [Although the reality of many such ideas only really meant the poor were displaced from one crowded area to another, even more crowded area]. During the mid-1850s the Metropolitan Railway was proposed to run from the Grand Union Canal, under “The New Road”, and via Smithfield to Mount Pleasant. And this, after various vicissitudes opened in January 1863.

CUT AND COVER

The first underground lines (Metropolitan, District, Circle, etc.) were constructed using the Cut and Cover Method. This was very disruptive to residents and, obviously, caused roads to be unpassable whilst the trench was open. The method also impacted negatively upon buried utilities. There was little co-ordination between engineering projects, for example the District Line and the Victoria Embankment were not built concurrently. These pressures meant that engineers started to research other methods of tunnelling deeper under London to lessen the impact on streets and sub-surface structures.

GREATHEAD

James Greathead and his oft forgotten colleague Peter Barlow developed the tunnelling shield which allowed the digging of deep level tunnels. The first of these was the Tower Subway but this was followed by the City & South London Railway (King William Street to Stockwell) in 1890 – the world’s first electrically powered ‘deep tube’ railway. This line featured the “padded cell” carriages (as it was felt that because the trains were passing through tunnel, there would be nothing for the passengers to see) and was initially proposed to be cable hauled but the bold decision was made to power the line by electricity. One consequence of the construction of deep level tunnels and platforms was the requirement to use the equally new technology of lifts (elevators) to transport passengers from street to trains.

In Mike’s opinion the Central Line of 1900 is the first true tube railway. It directly follows the line of Oxford Street and helped the development of the West End as a leisure destination. One disadvantage of this line was that the heavy locomotives originally in use caused vibration at street level. This led to the development and introduction of the Electrical Multiple Units (EMUs).

PRIVATE INVESTMENT

The development and growth of the Underground was financed by private investors. The most famous (or some would say infamous) of these was Charles Tyson Yerkes. He had made his money, and reputation, in the US particularly during the redevelopment and expansion of Chicago after the great fire of 1871. Yerkes was not averse to the use of bribery and blackmail and eventually

chose to leave Chicago and the US in the late 1890s. He turned his attention to London in 1900 and subsequently bought the District Railway, electrifying it via the new Lots Road power station at Chelsea, and financed the development of the Bakerloo, Piccadilly and Charing Cross Euston & Hampstead (Northern) lines. He also brought with him access to technology and marketing strategies from the US. However, after Yerkes died in 1905, many of the financial arrangements that underpinned the development of the 'Underground Electric Railways of London', along with the capital costs of construction and operation, left the fledgling Underground Group in a state of near bankruptcy. Nevertheless, he kick-started the development of the Underground we have today, which stands as his memorial.

Yerkes employed a single architect (Leslie Green) to ensure a unified look to premises. Green, of course, introduced the oxblood tiling schemes outside and patterns of tiles at platform level, rentable "airspace" above stations, and an easily recognisable architectural style.

The UERL Group were dynamic in terms of developing traffic for the new Tube railways. The new managing director, Albert Stanley (later Lord Ashfield) and staff such as Frank Pick, who was appointed to the Group in 1906, brought modern management and marketing techniques to the company. For example, in 1908, they managed to get the agreement of all the existing lines merged for marketing purposes to become known as "London Underground Railways." This year also saw the introduction of the first roundel (solid disc and bar). By 1912 the UERL had arranged to takeover the two earlier 'tube' railway lines (the C&SLR and the CLR) as well as buying the profitable London General Bus company – the latter brought a surface presence of feeder bus routes as well as income for the Group.

WORLD WAR 1, 1920s AND 1930s

The outbreak of WW1 in 1914 had an immediate impact on the Underground. As male staff joined up, for the first time, many female members of staff were recruited to continue the service and became familiar on the system. The use of the system also developed during wartime conditions. Despite the many difficulties several important elements of the network were first seen during these years.

Frank Pick continued to look for ways to encourage and promote opportunities for both commuting and leisure travel. Pick also wanted a uniform look to signage and so, in 1913, commissioned Edward Johnson's to design a typeface. This was introduced in 1916. Also in 1919, the roundel was redrawn, with standardised dimensions, to become the version we still have today.

Of course, later in the inter-war years saw the introduction of the "Tube diagram" by Harry Beck. His first design of 1931 had been rejected – but in 1933 it was, as a trial, accepted. It was instantly successful. At its basic level it shows what the customer wants at a glance: the order of stations and where lines interchange. It brought clarity and an icon to the system.

The 1920s saw the start of an active expansion of the system into the suburbs with the 'Northern Line' developed reaching into North London (to Edgware in 1924) and South London (Morden in 1926).

The company's own architect, Stanley Heaps, designed stations on the Edgware extension but the company appointed Charles Holden as consultant architect for station buildings on the Morden extension. Over the next decade Holden's spectacular designs for new and rebuilt tube stations would prove iconic for the Underground.

Central area reconstruction, as important as suburban extensions, saw the widespread replacement of lifts by escalators at this time. This helps passenger flow and interchange opportunities between lines that had often been constructed as 'opposition'.

Number 55 Broadway opened in 1929 as a statement of the aspirations of the still private company, the Underground Group, to be physically and philosophically at the heart of London. In 1933 the London Passenger Transport Board [LPTB] was formed which brought all the elements together under one umbrella. This also saw the Metropolitan Line cease as a "main line" type service featuring Pullman services and reaching deep into Buckinghamshire.

The early 1930s saw the major extension of the Piccadilly Line westwards beyond Acton and 'north' towards Cockfosters. The stations were designed by Charles Holden to be confident statements of a

strong corporate identity, being a civic focus to the many new suburbs as well as being “temples to travel” and “portals to the system”.

Even with all its expansion, London Transport had a paternalistic view of its employees, providing them with subsidised canteens, job security, health care, sport and social clubs, etc.

The New Works Programme, which was to run from 1935 to 1940, would have seen many extensions to the network, particularly on the Central, Northern and Bakerloo lines. Much of the works were underway before being interrupted by the outbreak of World War 2 in 1939.

WORLD WAR 2

The war years saw the Underground take on a role to both serve and shelter. Some of the completed but yet to be fitted-out Central Line tunnels in Essex were taken over by Plessey as an aircraft factory. Disused tunnels were also adapted to provide public shelters as there was a feeling of security from being below ground level. However, a number of stations did receive direct hits in the bombing, most notably Moorgate, Bank and Balham, with associated loss of life.

On a lighter note, at this time the publicity department of LU produced a large number of public education posters to encourage safe use of the system (as passenger numbers had increased greatly with the effects of petrol rationing on personal transport took effect). Mike would quite like to see some of these cartoons reintroduced to the system today.

EXPANSION, UNDER INVESTMENT AND “FARES FAIR”

1946 saw the restart of the stalled Central Line expansions out to Epping and Ruislip. However, the post-war years of austerity meant that various elements of the ‘New Works Programme’ were abandoned – notably the partially constructed Northern Line extensions north of the river. The R49 stock on the District Line were the first aluminium body trains, making use of technology developed during the War and this was further developed in new rolling stock brought into service in the late 1950s and early 1960s. Generally, the post-war austerity years saw a lack of investment in the system, particularly in the area of general maintenance as those funds which were available were concentrated upon building the new Victoria Line. Passenger numbers were, also, steadily dropping. The two tragedies of Moorgate and King’s Cross could be seen as symptomatic of this decline.

The Victoria Line, originally proposed in post-war London plans and which finally opened in 1969, was the first new line through central London for 60 years. The line was notable for the use of computer control of signalling and trains, an important reminder that London Transport was at the time at the forefront of such technology, under such staff as Robert Dell the Signals Engineer. The system had been trialled on the Hainault loop of the Central Line from 1964. The next major extension of the system was to be the extension of the Piccadilly Line to Heathrow in 1977.

LPTB was a public corporation and ‘London Transport’ had been nationalised in 1948 and had become a bit of a political football, particularly over Ken Livingstone’s “Fare Fair” campaign of 1981/82. This idea failed in the High Court when appealed by Bromley Council. However, the concept of zonal fares and simplified fare structure did live to see another day and enabled the introduction of the Oyster cards we have today.

The 1990s and 2000s finally saw plans to expand the Underground system with the development of the Jubilee Line Extension and its emphasis in station design upon scale and impact of stations to engender civic pride.

Attempts to finance both develop and upgrade the network saw the introduction of the controversial PPP for the Underground between 2003 and 2010. Continuing debates about the costs associated with PPP (and its final failure) somewhat hide the facts that much work was undertaken to improve both stations and trains during this period. LU is now continuing with both large scale investment in new trains such as the S Stock; signalling and major rebuilding and redesign schemes at existing stations such as Tottenham Court Road, Bank and Victoria. In addition the ongoing refurbishment and improvement of many stations and lines continues.

THE FUTURE

Plans are in for the Croyley Rail Link, extension of the Northern Line to Battersea and providing a 24 hour service. London Underground have appointed Studio Egret West as design consultants for future station design – ranging from complete rebuilding, to more small-scale interventions and

looking to build on and develop LU's brand as well as to better integrate stations into the surrounding streetscape and communities.

Tendering has begun for the next generation of trains. Working with the design studio of PriestmanGoode, LU have reviewed both the good and bad points of the 2009 and S Stocks and have developed a checklist for new designs which includes:

- A unique look for London Underground trains.
- Air conditioning.
- More environmentally conscious – lighter and fuel efficient.
- Walk through.

The meeting then thanked Mike in the usual manner and a Question and Answer period followed.

Q: Is there any chance of the Bakerloo Line being extended to Camberwell? It was planned in the 1940s but never happened.

A: *Never say never, it could happen but there are no plans at present. It wouldn't be until the Bakerloo Line revamp in the 2020s. Don't forget that the planned extension to Battersea is being paid for, almost completely, by the developers of the old power station.*

Q: What is the cost difference between train stock for the "cut and cover lines" compared to the "deep tunnel lines"?

A: *Can't give precise figures but there is quite a difference as S Stock were a standard, off the shelf, product from Bombardier. The stock for the deep lines would need to be designed specifically and meet complex requirements. It is likely that a uniform design for the Piccadilly, Central and Bakerloo lines would be looked for to achieve cost savings, and provide standardised stock.*

Q: Are there any plans for a directory of historic signs?

A: *A "railway heritage features" list is currently being updated for each station and it is hoped that this will be available online soon. There is an issue of making too much information available because it may indicate to thieves where the valuable assets are! Mike does want to maintain heritage on site as much as possible, rather than in museums. However rust and decay means that originals reach the end of their station life and need replicating; and we try to get the best replica possible.*

Q: How will the proposed closure of all ticket office and increase in retail effect the heritage features of stations?

A: *Designers are already looking at adapting spaces to make the best use of space. Heritage will not be wiped clean (as did happen in past years – especially the UTS system). LU recognises the need to take account of the heritage of the system and individual stations. However, there is a need to maximise income from station space as London Underground's subsidy from Government decreases. Mike is well aware of the heritage and aim to protect and enhance; but needs to make money for the company to fund the conservation by maximising income from stations that can have retail facilities increased, with consideration that 82 stations are "listed".*

Amanda Day