

Transport for London



London Underground
D STOCK 1980–2017



London Underground **D STOCK 1980–2017**

01
Newly refurbished D stock on
show at Kensington (Olympia) in 2005.
(Trevor Wright)

District line

Timetable

Last D stock rail tour
Sunday 7 May 2017

D STOCK 1980-2017 DISTRICT LINE TIMETABLE

This is a non-stopping service

The doors will only open at stations shown in bold. All other times are for information only.

High Street Kensington	09:43	Boarding commences
High Street Kensington	09:55	depart
Earl's Court	09:58	
Kensington (Olympia)	10:02	arrive
Kensington (Olympia)	10:04	depart
Earl's Court	10:08	
High Street Kensington	10:12	arrive
High Street Kensington	10:25	depart
Earl's Court	10:29	
Richmond	10:48	arrive
Richmond	10:50	depart
Earl's Court	11:12	
High Street Kensington	11:16	arrive
High Street Kensington	11:31	depart
Earl's Court	11:34	
Wimbledon	11:53	arrive
Wimbledon	12:00	depart
Earl's Court	12:19	
High Street Kensington	12:22	arrive
High Street Kensington	12:31	depart
Earl's Court	12:34	
Acton Town	12:50	
Northfields	12:56	arrive
Break		
Northfields	14:02	depart
Acton Town	14:08	
Earl's Court	14:22	
Tower Hill	14:46	
Plaistow (Bay Road)	15:04	arrive
Break		
Plaistow (Bay Road)	15:28	depart
West Ham (Siding)	15:30	arrive
West Ham (Siding)	15:41	depart
Upminster	16:10	arrive
Upminster	16:20	depart
Tower Hill	17:04	
Earl's Court	17:28	
Acton Town	17:44	
Ealing Broadway	17:51	arrive

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Cover illustrations designed by Paul Vizzari

Picture credits

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Pages are numbered to resonate with D stock car numbering. Single-ended unit leading car numbers start at 7000.



02
D stock train at Earls
Court station, 1980.

FOREWORD



After 37 years of sterling service on the District line, the D stock is retiring. To mark this event, on Sunday 7 May 2017 we have organised

a day in which the whole of the District line has a chance to say goodbye to an old friend.

The D stock trains were built between 1978 and 1981 by Metro-Cammell in Birmingham. Even though they aren't the oldest on the London Underground network, their replacement with new S stock – along with the Metropolitan, Circle and Hammersmith & City line fleets – allows the lines to have a standard fleet before a major upgrade to the signalling system.

For those of you lucky enough to have a place on the last D stock trip on 7 May, we hope you'll have a great time as you travel along every part of the line the stock served. This occasion marks the completion of a seven-year programme to replace all the trains on the four sub-surface lines with new air-conditioned S stock trains. It's part of the Four Lines Modernisation Programme (4LM), the benefits of which are looked at later in this booklet.

Money raised from ticket sales and the raffle for today's event

will go towards restoring London Transport Museum's heritage rail vehicles, based at the Museum Depot in Acton.

The District line has been working in collaboration with 4LM and London Transport Museum to hold today's event. The Museum is running a pop-up shop to coincide with the lunchbreak at Northfields station, selling memorabilia from the D stock, and other District line related goods.

A big thank you to everyone who has made this trip possible. This includes our drivers, stations, service control and depot staff.

The District line will be 150 years old in December 2018. We are proud of our history and heritage, but while we celebrate the best of the past, we continue to strive to provide our customers with the train service they need for the 21st century.

Enjoy the day and the memories of a train that has delivered service to many millions of customers during its service to London.

Pat Hansberry
District line General Manager

DISTRICT LINE HISTORY

Following the success of the Metropolitan Railway (London's first underground railway opened between Paddington and Farringdon in 1863), the Metropolitan District Railway was formed to build the south-side of the 'inner circle' connecting London's railway termini.

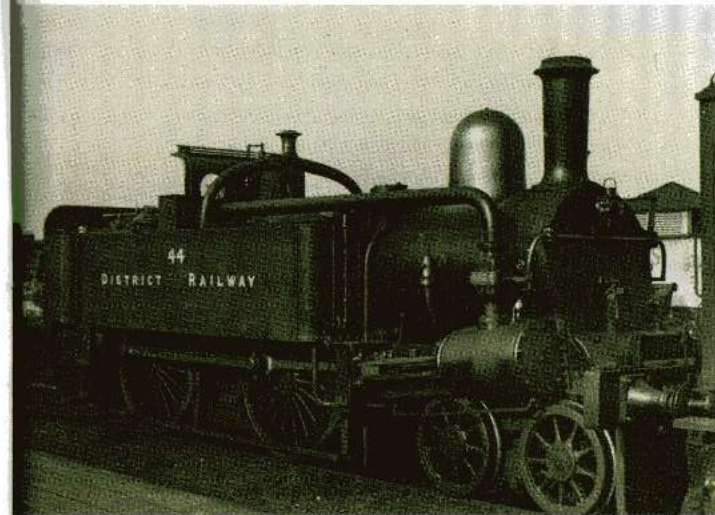
Operating as the District Railway, the first section opened in December 1868 from South Kensington to Westminster Bridge. Services were run by the Metropolitan Railway using wooden carriages hauled by steam locomotives. By 1871 when the District acquired its own trains, the railway had extended to West Brompton and Mansion House. A curve from Earl's Court onto the West London Railway via Kensington (Olympia) also opened

The line was extended to Hammersmith in 1874, Richmond in 1877, Ealing Broadway in 1879, Putney Bridge in 1880, Hounslow Barracks (now Hounslow West) in 1884 and Wimbledon in 1889. As part of the project that completed the Circle line in October 1884, the District began to serve Whitechapel too. Some services began running through to Southend over the London, Tilbury & Southend Railway (LT&SR) in 1902.

At the start of the 20th century the District faced competition from the new, cleaner, electric deep-level Tube services and electric trams. The District was still using steam locomotives underground and passengers continued to endure smoke-filled stations as a result. The American Charles Yerkes, who was later to form the Underground Electric Railways of London, financed the much-needed electrification of the District Railway and the first electric services ran from Ealing to South Harrow in 1903.

Electric multiple units were introduced on other services in 1905, and East Ham became the eastern terminus. Electric locomotives were used on some services from Mansion House to Earl's Court, and in later years exchanged for a steam locomotive at Barking on LT&SR services from Southend to Ealing Broadway.

Electric services were gradually extended to other parts of the line, including Barking in 1908 and Upminster in 1932.

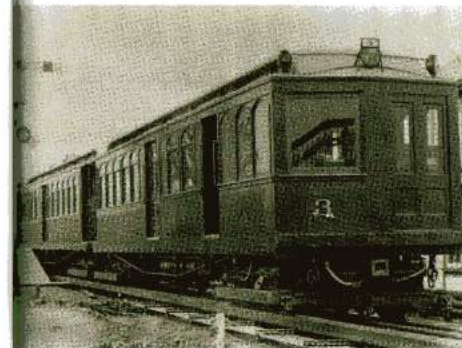


03 Metropolitan District Railway steam locomotive No. 44 at Putney Bridge station, 1902.

04 Children and adults wait to board a District Railway B stock train at South Harrow after a day out, 1924.

05 Southend by District Railway, poster by Charles Pears, 1915.

06 District Railway A stock at South Harrow, c1903.



06



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04

District line services to South Harrow began in 1903 and to Uxbridge in 1910. They were replaced by Piccadilly line services in 1933. Piccadilly line services also took over the Hounslow branch in 1933, but the District continued to run peak hour weekday services on the line until 1964.

On 1 July 1933, all the capital's bus, tram and Underground railway operations were brought together in a single organisation, the London Passenger Transport Board, soon to be known simply as London Transport. The District Railway also became the 'District line'. In the same year, Piccadilly line trains ran through to Uxbridge and the District shuttle was withdrawn. Off-peak District line services on the Hounslow branch were withdrawn in 1935 and South Acton was served by a shuttle to Acton Town. This service ended completely in 1959. District line services beyond Kensington (Olympia) were withdrawn in 1940.

The slow tracks on the former LT&SR line to Upminster were shared with steam locomotive-hauled goods and passenger services until 1961, when the District took over exclusive use of the

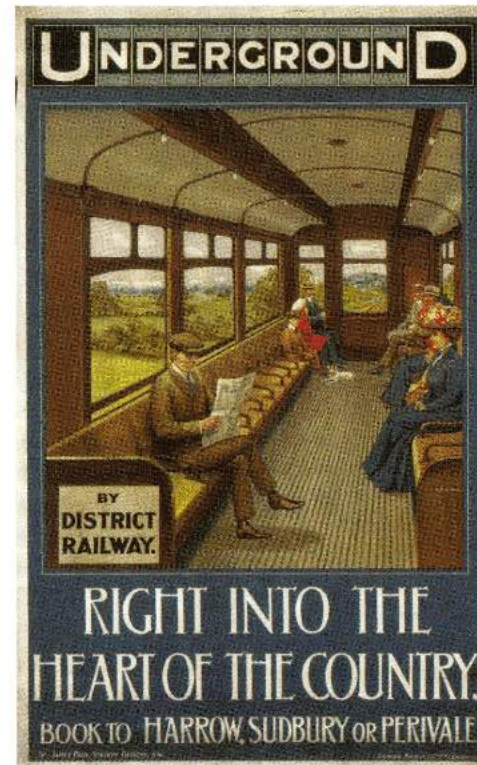
DC electrified lines. Extensive track and station remodelling took place at Barking to separate the Underground and mainline services.

The peak-hour service to Hounslow West was withdrawn in 1964. This branch later became the Heathrow branch of the Piccadilly line when the Tube was extended to the airport in 1977.

Today's District line serves 60 stations. It operates daily services between Upminster, Ealing Broadway, Richmond and Wimbledon. Wimbledon branch trains also operate to Edgware Road. Services to and from Kensington (Olympia) operate at weekends and during special events.

Two main depots serve the line, at Ealing Common and Upminster. There are also stabling facilities at Parson's Green, Lillie Bridge and Triangle Sidings (near Earl's Court), and Barking.

The District line is not currently part of the Night Tube network, due to ongoing upgrade work, but may be included during the 2020s.



07

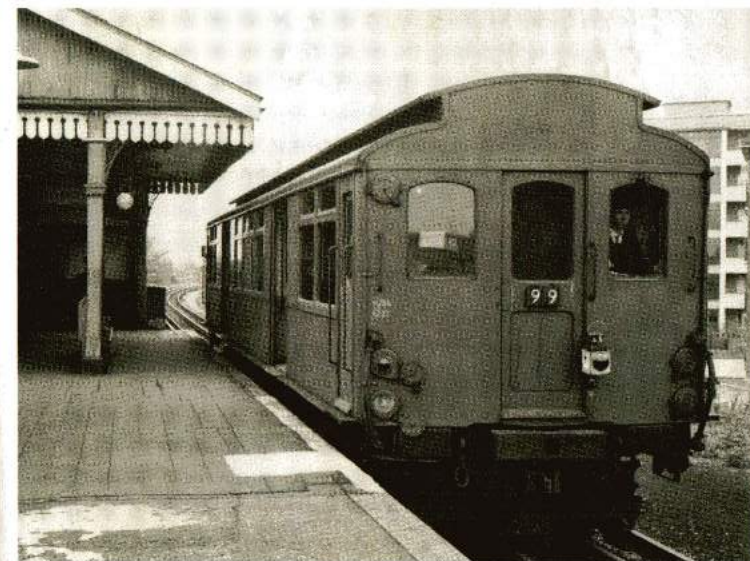


08

07
Right into the heart of the country, poster, c1910. Passengers enjoy the spacious interior of a District Railway train.

08
Old and new technology. District Railway electric A stock train and steam locomotive No. 16 seen together at a time of changeover c1903.

09
Q stock single-car unit at South Acton on the Acton Town shuttle, shortly before closure in 1959.



09



10



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10 Stationman despatches a P stock Metropolitan line train at Harrow-on-the-Hill in 1954.

12 Stylish ladies leave the train at Earl's Court in 1939. Here we can (just) see two different styles of Q stock cars.

11 Crowds board a District line train at Ravenscourt Park on a children's outing to Eastcote in 1934.

13 Clerestory-roofed Q stock at Chiswick Park, c1964. (Barry Le Jeune)

14 F stock train at Ealing Common Depot, 1920.



14



13

ELECTRIC TRAINS BEFORE THE YEAR 'D'

Standardisation of the fleet has been a long process. By the end of the 1940s, there were several different types of train and car types operating on the line. This was the result of gradual expansion and electrification and an increase in passenger numbers. Electric multiple unit trains were still a relatively new concept in the early 20th century, so when new cars were required, the technology and appearance improved each time.

London Transport's New Works Programme of 1935 aimed to replace all cars built before 1920, most of which were constructed with wooden bodies. However, due to the Second World War, changes were not completed until the late 1950s. After this time, two main types of trains operated on the line:

Q stock – formed of clerestory-roofed cars of several different designs built between 1923 and 1936, modified to work with flared-sided cars built in 1938 (Q38).

R stock – formed of flared-sided cars including converted and newly built vehicles. They were introduced gradually throughout the decade using cars built between 1938 and 1959. The earlier car bodies were of steel construction and later ones in aluminium. This was partly due to a steel shortage after the Second World War, but using aluminium

also saved both weight and energy. Aluminium body construction has since become the standard for all London Underground trains.

Some P stock trains also operated on the line, although most operated on the Metropolitan line Uxbridge service and Circle line at the time. They were almost identical in appearance to R stock and Q38.

Introduction of A stock onto the Metropolitan line in the early 1960s allowed P stock trains to be modified and reclassified as 'CP' stock trains. They were transferred to the District line to replace some of the oldest Q stock cars.

Introduction of C69 stock in 1970 onto the Hammersmith & City (H&C) and Circle lines, allowed the remaining P stock and H&C's very similar O stock to be cascaded to the District line to replace the last Q Stock. All O and P stock trains were reclassified as 'CO/CP' stock as both types could operate together.

District line services were operated with six-car trains off-peak and eight-cars during peak hours. Following the withdrawal of the last Q stock in 1971, most trains were reformed as fixed seven-car trains, and some six-car trains for the Edgware Road branch.

SILVER TRAINS

The District line operated both the first and last silver trains on the Underground network.

The first occasion was an experiment to test the condition of an unpainted aluminium train, using an all-new R stock train in 1953. Most of these cars remained unpainted throughout their working lives. The idea was to save paint costs and provide lighter, more energy-efficient trains. Further unpainted cars were introduced later that decade and some red cars were painted silver to match. Mixed formations of red and silver R stock trains then started to appear.

When the very similar red CP stock trains became more commonplace on the line in the 1960s, all the red R stock cars were painted silver. These types were not compatible, so repainting them allowed depot staff to easily distinguish between the two. The silver paint didn't wear very well, so it was replaced with off-white grey by the early 1970s.

All new Tube trains built from the late 1950s, and over the next thirty years, would be unpainted. However, the graffiti craze of the 1980s led to trains having an unwelcoming appearance, so it was decided to paint them

again. All new stock built from the early 1990s onwards would carry the corporate red, white and blue livery. All silver trains expected to last into the 21st century were painted as part of a major refurbishment programme. This included D stock, at the end of the programme, with the last unpainted train running in 2008.

MIND THE DOORS!

All electric District line cars had sliding doors as standard but those built up to the early 1930s were operated by hand. Moving trains with doors left open were fairly common, especially in summer months. A practice like this seems unimaginable today!

Powered doors were introduced in the 1930s and many older cars were converted. However, trains with hand-worked doors continued into the 1950s. Push-button passenger door control was also introduced on most lines, including the District in 1938. It would later be withdrawn in 1959 due to safety issues. An improved version of push-button control was introduced again in 1980 on the D stock.



15
New R stock unpainted train
at South Kensington in 1953.



16
Passengers on a crowded
District line train in 1945.
The push button doors
were withdrawn in 1959.

ORDERING D STOCK, AND MORE C STOCK

By the mid-1970s the pre-war CO/CP stock and some post-war R stock trains were becoming unreliable due to their age. Even though some R stock cars were barely 20 years old, replacement of the fleet was an opportunity to standardise operations with common train types.

London Transport placed an order for 75 six-car D stock trains in 1976. Each car was 18 metres long, making them the longest cars on the Underground. A six-car D stock would be roughly the same length as a seven-car R stock. There would therefore be both a cost and energy saving.

There was a problem in that Notting Hill Gate, Bayswater and Paddington District line platforms were only long enough for six-car standard length trains. This meant D stock would only operate on the main services via the City. A shorter train was therefore needed for the Edgware Road branch. Eleven extra C stock trains were built, known as C77 stock. They were compatible with the C69 batch and could also be used on the Circle and H&C too. These trains were maintained as part of the Circle and H&C fleet but operated by District line train crews on the Wimbledon to Edgware Road service. C69/77 stock trains entered service on this route in 1978.

17
New D stock (far right) next to R stock train and Metropolitan Railway locomotive 'Sarah Siddons' at Ealing Common Depot, 1980. (Kim Rennie)

18
Three-car D stock test run approaching Paddington on the Hammersmith & City line, 1980. (Kim Rennie)



17



18

INTRODUCING D STOCK

Like most new Underground trains of the period, D stock was manufactured by Metro-Cammell in Birmingham. They were built between 1978 and 1981. As the trains were originally intended to enter service in 1978, they are sometimes referred to as D78 stock.

The first D stock train actually entered passenger service on 28 January 1980. Replacement of the old District line trains took three years to complete, with the last CO/CP stock withdrawn in 1981 and the last R stock in March 1983.

London Transport began to add a splash of colour to the outside of some of its new silver trains in the 1970s, including red doors on the 1972 mk2 stock for the Northern line. D stock was given a half-red cab front. This styling had also been used a few years earlier on the Piccadilly line's 1973 stock.



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19
D stock train on test at Northfields, 1979.

20
Another D stock on test in 1980 at Northfields station, an elegant example of Charles Holden's architecture.

21
Three-car D stock at Whitechapel on the East London line, next to a British Rail Engineering Diesel Multiple Unit. (Paul Shirra)

22
D stock and 1973 stock sharing Piccadilly line tracks at Hammersmith station. (Kim Rennie)

23
Last day in service for CO/CP stock train, 31 March 1981. Shown here next to new D stock. (Kim Rennie)

FORMATION, FORMATION

The six-car D stock trains are formed of two three-car units. There are two types of unit:

Single-ended – with a driving motor car at one end, a trailer in the middle and a non-driving motor car at the other end, including a mix of east and west-facing sets.

Double-ended – with a driving motor car at each end and a trailer in the middle.

The most common formations would be either two single-ended units or one single and one double-ended unit.

Occasional formations of two double-ended units were possible in the early days. However, the driving cars are slightly longer than non-driving cars, which makes the train slightly too long to be seen fully by driver with the One Person Operated (OPO) safety mirrors and monitors.

The D stock operated almost exclusively as six-car trains on the District line. There was, however, a period between 1985 and 1987 when three-car, double-ended units operated on the East London line.

SINGLE LEAF DOORS

One of the notable design features of the D stock is the single leaf sliding passenger doors. They are slightly wider than half a regular double-door set and equally spaced with four along the side of each car.

The idea was to help the even distribution of passengers along the platform and reduce maintenance costs, but it wasn't entirely a success. Boarding and alighting was slower than a shorter C stock train, which had four sets of double doors on each side per car.

Single leaf doors had been trialled on a few Tube cars in the early 1920s and became a feature on the Jubilee line 1983 Tube stock. These types proved unsuccessful leading to early withdrawal after just 10-15 years in service. The D stock was a much larger fleet, and the train's reputation for being one of the most reliable on the Underground network helped it to have a decent lifespan, despite the design of the doors.



24
Press photograph promoting 'push button' doors, 1979.

COMMON PARTS

Faced with declining patronage on its services in the 1970s, London Transport came under considerable pressure to economise in all areas of its operations.

The opportunity to replace the varied District line fleet with new D stock trains led to interesting solutions to reduce ongoing maintenance costs. The D stock was specified to operate on smaller wheel sets (bogies) than had traditionally been the case, and these were interchangeable with the 1973 Tube stock already in service in the Piccadilly line. In addition the bogies featured rubber suspension which was also designed to reduce costs.



25
Metro-Cammell (now part of Alstom) built D stock trains at their Birmingham factory. (Michael Leon)



26
The car line diagram for D stock trains didn't show the District line High Street Kensington to Edgware Road service, which was operated by C stock trains. This edition dates from 2012.



27
Refurbished D-stock
train at Stamford Brook
(Kim Rennie)

To enter
Push the illuminated button beside the door.
The door will be closed by the guard or train operator in the normal way. It will open only when the sign is lit.



To leave
There are two buttons, one at each side of the door.
Push either button when the sign is illuminated at your station. The guard will not open the doors, but he can selectively re-open doors which are obstructed, and he has a special key-operated switch to open any door in an emergency only.



REMEMBER
YOU MUST PUSH THE ILLUMINATED BUTTON
TO OPEN THE TRAIN DOOR.

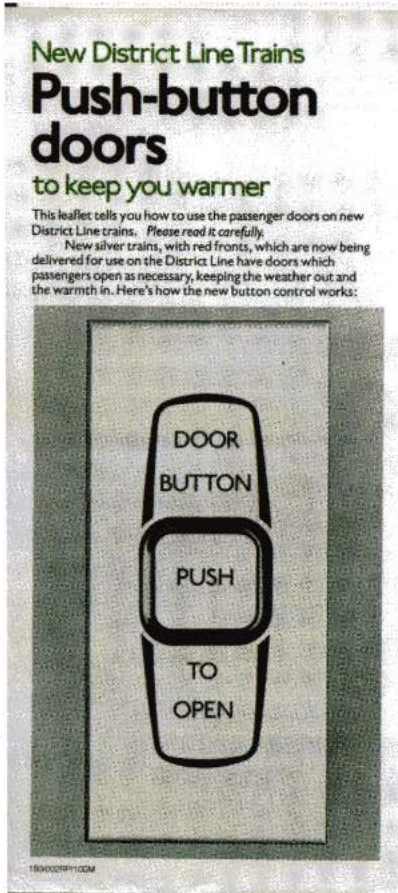
The buttons have been placed at a height to suit most children. Please help blind or disabled people.



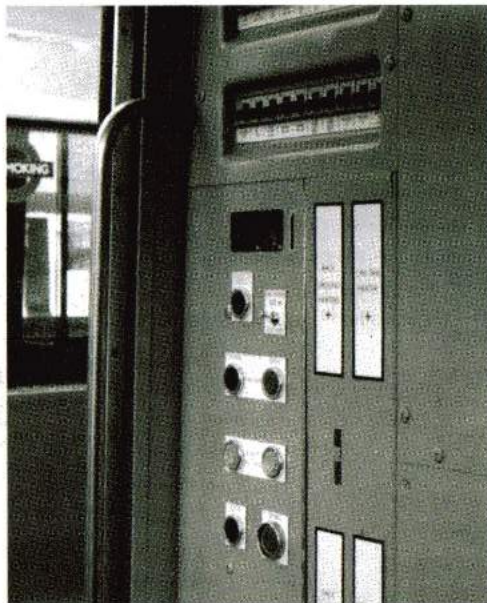
28

28 and 29
Push-button doors were reintroduced to the Underground with the new D stock trains. Leaflets explained how to use the door buttons and promoted the benefits of warmer trains.

30
Train guard panel in a D stock cab. The guard travelled in the rear of the train.



29



30

PUSH TO OPEN

Push-button doors were reintroduced to the Underground with the launch of D Stock. The aim was to keep people warm during winter months. Leaflets were distributed to all District line stations with the intention of educating customers about this and the benefits of their comfortable new train. They were also printed in French and German for visitors to London.

The benefits of keeping the saloons warm in winter were fine, but making people too warm in the summer became a major problem. The clean lines of the D stock body design with its sealed double-glazed windows made the trains unbearably hot in summer. The concealed ceiling fans and opening windows in the inter-connecting doors provided little respite. Modifications were made to the ceiling fans, with additional units added, but this did nothing to prevent a number of passengers passing out during a heatwave. The trailers were smoking cars until 1983 after which it was banned on Tube trains. This made the environment even more unpleasant.

From 1982, train guards were instructed to override the push-button function and open all doors at stations during summer

months. This arrangement would continue when the District line went driver-only in 1985. Posters were displayed at all stations at the end of each summer to remind customers when the push-button arrangement was reinstated. The push-button system was eventually abandoned in 2000, as one of the measures to reduce platform dwell times and delays.

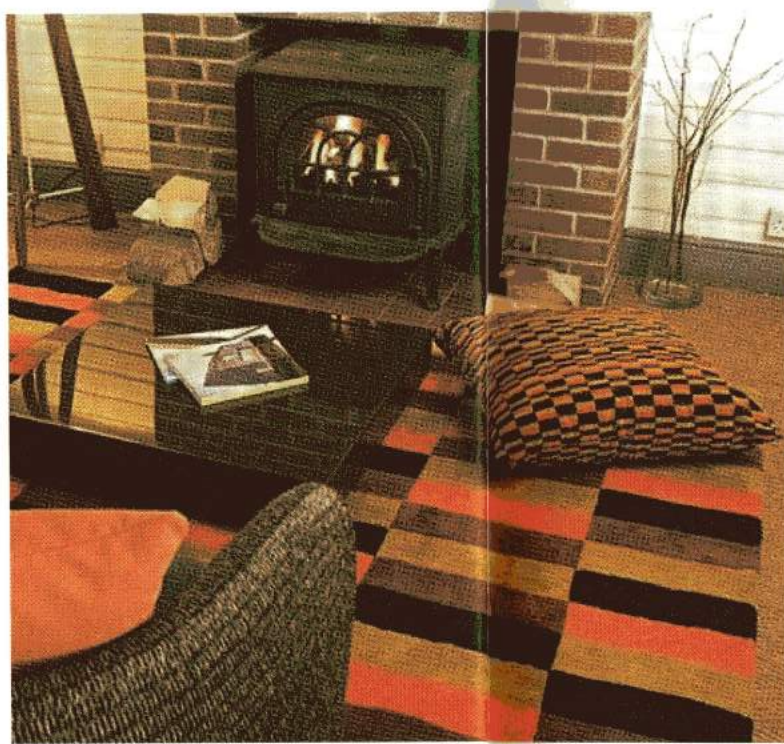
The facility has since been reintroduced for stock, with a slightly different function. Doors automatically close after 45 seconds in the platform, usually at a terminus. This is to maintain the car temperature with air conditioning in summer and heat in winter.

D stock passenger comfort in the summer was greatly improved when the trains were all fitted with hopper-style opening windows between 1983 and 1985. This was considered a cheaper and more effective alternative to air conditioning at a time when the only British trains to have it were on premium inter-city routes. The Tube would have to wait until 2010 for its first air-conditioned trains.

COLOURFUL AND INVITING

The original D stock interior was designed to be colourful and inviting with a palette of orange, yellow, brown and beige – a stark contrast to the old District line trains and the dowdy greys and blues of the C stock. The original seating moquette proved very popular and was also used on all new double deck buses being introduced at the time.

The interior finish wore well and lasted into the 2000s with only minor changes; the inter-connecting doors went from orange to brown and the seating moquette was updated in the late 1990s.



31



32
The new D stock trains featured a moquette designed by Sir Misha Black. Traditional Canadian maple flooring and strap hangers were also specified.

31
The popular D stock moquette is used in a variety of products, available from the Museum shop in Covent Garden and online. ltmuseumshop.co.uk

33
London Transport was proud of its new D stock train. Press photographs showed smartly dressed passengers and modern interiors.



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34
Trials were carried out with new seating fabric and interior finishes before refurbishment, 2004. (Trevor Wright)

34



35
Prototype refurbished D stock with newly cut out windows at the end of the car, 2005. (Trevor Wright)

35



36
Refurbished interior of production D stock with new green and blue moquette, 2005. (Trevor Wright)

36



37
Refurbished D stock next to London Overground class 378 at Kew Gardens, 2013. (Kim Rennie)

38
Front ends of D stock trains in original and refurbished liveries, Hornchurch, 2006. (Trevor Wright)

39
D stock trains lined up with uniquely liveried silver train with grey roof in the centre. (Trevor Wright)



37

REFURBISHMENT

D stock were the last silver Underground trains to be refurbished. A prototype refurbishment was carried out in 2001. The exterior carried the corporate red, white and blue livery with a grey roof and it was styled the same way as A and C stock, giving the D stock a similar appearance. The livery was applied with vinyl stickers instead of paint.

The trailer car was extensively fitted out with a new cream-white interior, and restyled seats. Car-end windows were added as an improved security feature. Space for wheelchair users was created by replacing some of the fixed seats with spring-loaded tip-up seats.

In 2003, the infrastructure of the District line was partly privatised in a public-private partnership, managed by the Metronet consortium. A contract was awarded to Bombardier UK to refurbish the D stock fleet. The interiors were given a different colour scheme to the prototype and the styling was somewhat different. Even though the refurbishment gave the trains a completely new look both inside and out, the interior refit was scaled back as the trains were only expected to last another 8-10 years.

They had car-end windows installed but retained most of the original partitions and panels which were painted in the blue-grey finish. A new blue seating moquette was adopted.

The classic ball-ended strap hangers for standing passengers, which had been a feature on D stock and all Tube trains since the 1930s, disappeared for the last time.



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The Olympic torch heralding London 2012 was carried on D stock car 7007, which was specially liveried with the Olympic rings. (Kim Rennie)

41
S7 trains, like the one seen here next to a D stock train at Hornchurch, were first introduced to District line services in 2014. (Trevor Wright)

42
Some of the fleet of 75 D stock trains at Upminster Depot. (Paul Shirra)



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D STOCK – A NEW ROLE

Two D stock trains are being retained by London Underground as rail adhesion trains. These will be used on the open sections of line, including the Metropolitan line, to keep rails clean during autumn and winter periods, especially during the leaf fall season.



43
D stock converted to a rail adhesion train. Northwood 2016. (Kim Rennie)

D STOCK REPLACEMENT AND FOUR LINES MODERNISATION

The upgrade of the sub-surface lines, which represents 40% of the Tube network, will increase capacity on these services by 30% when complete. The upgrade includes new trains and signalling.

Replacement of the Metropolitan line fleet was completed in 2012. Its 54 and a half eight-car A stock trains were replaced with 59 eight-car S8 stock trains.

The 46 strong six-car C69/77 stock on the Circle, Hammersmith & City (H&C) and District line Wimbledon to Edgware Road services were replaced by 53 seven-car S stock. The first new trains entered service on the H&C in July 2012 and on the Wimbledon to Edgware Road service in February 2014. The last C stock train was withdrawn from passenger service in June 2014. All platforms on the Hammersmith branch were extended to accommodate the longer trains. This wasn't possible at Notting Hill Gate, Bayswater and Paddington District line platforms; as well as the Circle and H&C platforms at Baker Street. Automatically programmed selective door opening (SDO) was introduced so the doors on the cars that overhang these platforms remain closed, without the Train Operator having to intervene.

S stock cars are shorter than D stock but the overall length of the new seven-car train is 117 metres, seven metres longer than a six-car D stock. Starting in August 2014, 80 S stock trains have replaced the 75 D stock fleet. The final S stock was delivered at the end of 2016.

Both Ealing Common and Upminster depots have been upgraded and expanded to support the S stock fleet. They will also maintain the trains used for Circle and H&C services, meaning all 133 seven-car trains are available for use on the District line.

The last D stock in passenger service on the District line ran on Friday 21 April 2017.

With the entire sub-surface fleet replaced, the next phase of the Four Lines Modernisation can now commence. A new automatic train control (ATC) signalling system will be phased in across the network over the next few years. A new state-of-the-art service control centre has been built at Hammersmith and will gradually replace local signal cabins and control centres, which date from the 1920s through to the 1950s. ATC signalling will provide faster journey times and improved frequencies.

VIVARAIL D-TRAIN

On a cold and frosty morning in January 2015 the first of the D78s arrived at the Quinton Rail Technology Centre in Warwickshire to begin its new life ...

The excellent quality bodyshell and bogies, meticulously cared for by LUL over the years, would now become the base of the brand new train. Vivarail Ltd, headed by Adrian Shooter and with a team of experienced engineers and designers were about to create the Class 230.

Upon arrival the trains are completely stripped back to the bone and rebuilt with new systems throughout. Most exciting is the new modular engine design – the undercarriage is completely unrecognisable. All the heavy electro-mechanical gear has been replaced and instead you will find discreet modules. Each power car has two new engines with state-of-the-art Gensets (a combination of diesel engine and electric generators). The prototype train is diesel-powered but work is already underway to develop a battery-powered train and thereafter Electric Multiple Units (EMUs) or Hybrids Diesel and Electric trains.

Internally the prototype train retains the classic D78 layout, the extremely comfortable seats proving a big winner! We have installed a new PIS system, LED lights, door controls and, most noticeably, the front end. The District line being notably lacking in level crossings we have had to design a whole new structure to protect the driver, it means the front of the Class 230 looks markedly different to the D78, which is only fitting for its new life on the mainline.

Although there is always a sadness in saying goodbye to a well-loved train, the D78s, unlike most redundant stock, will live to see another day!

Our thanks to Vivarail for providing information and photographs.



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44 - 48
D78s at Quinton (top left) and undergoing testing and refurbishment for their new role as Class 230 on the National Rail network (bottom right) 2017.

LONDON TRANSPORT MUSEUM FRIENDS



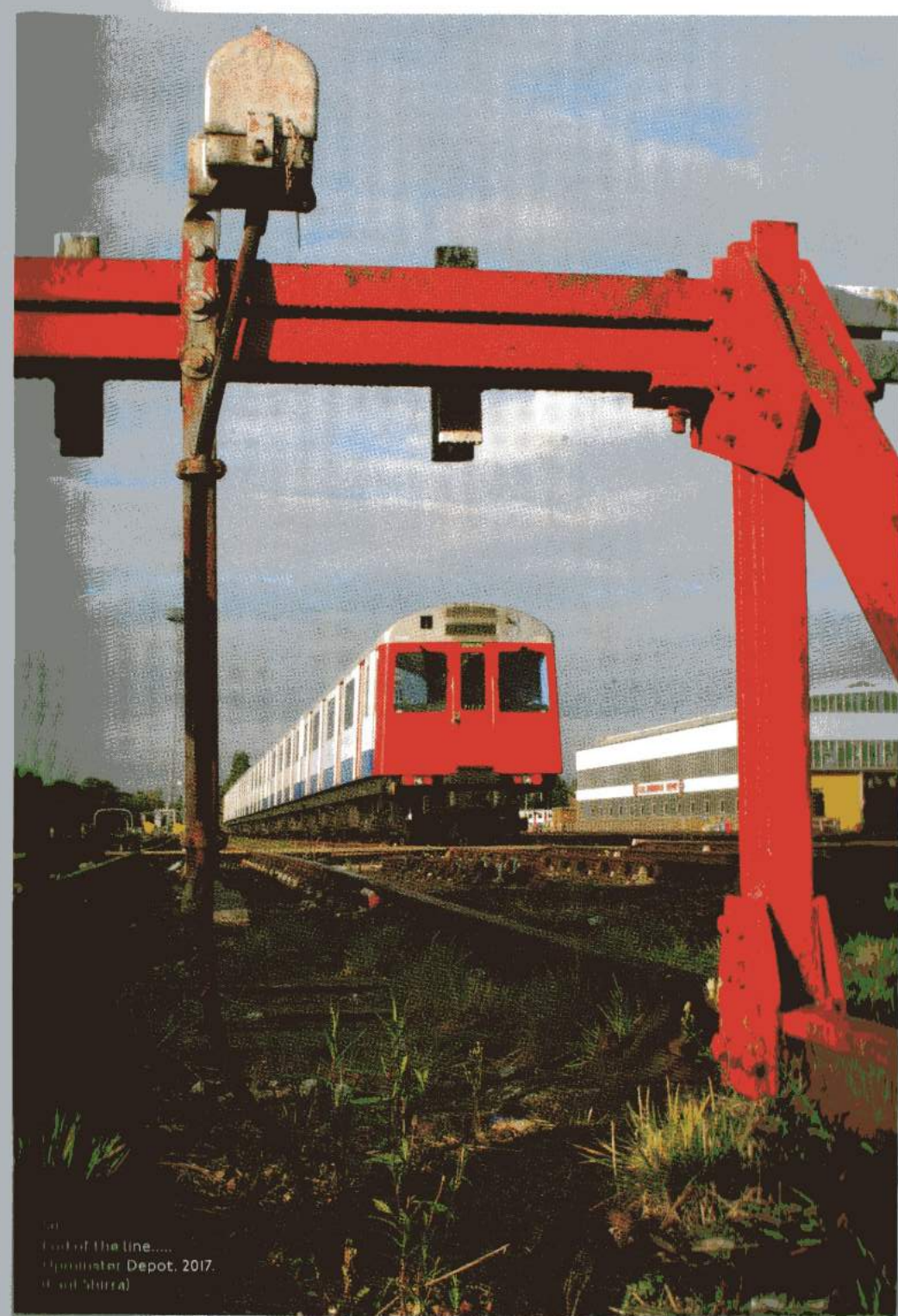
Q stock at the Museum Depot, awaiting restoration.

Money raised from the tour on 7 May 2017 will help support the restoration and maintenance of electric trains in the London Transport Museum collection. You can see them at the Museum Depot at Acton in west London.

Join the Friends and help to keep London's transport heritage alive. ltmuseumfriends.co.uk



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S stock train at Earl's Court in April 2017. The station has been substantially modernised and beautifully restored. (Michael Leon)



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End of the line....
Museum Depot, 2017.
(Paul Stora)

