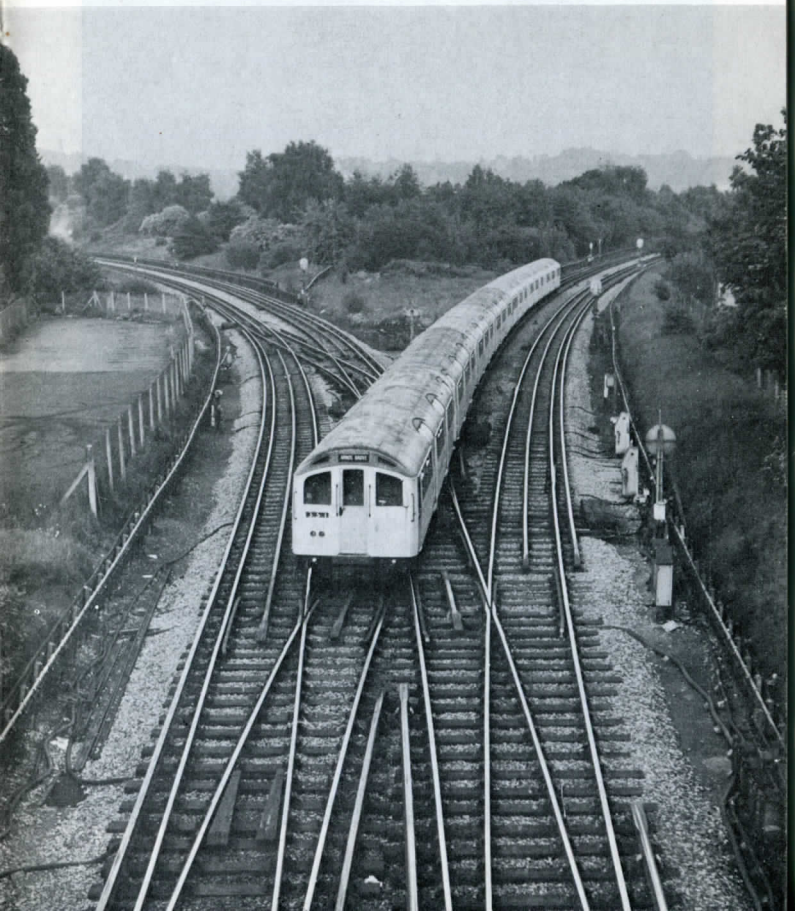
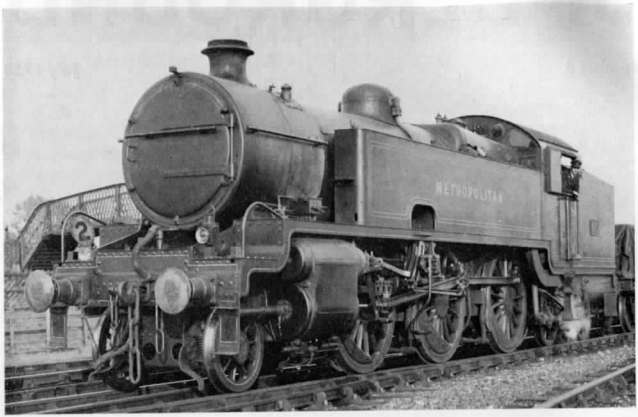
UNDERGROUND

Number 6

July 1980

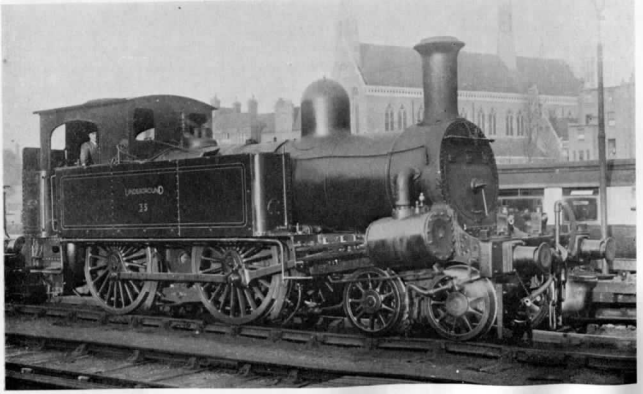




Above: "K" class loco no. 115 seen at Quainton Road in 1935. [Photomatic Ltd

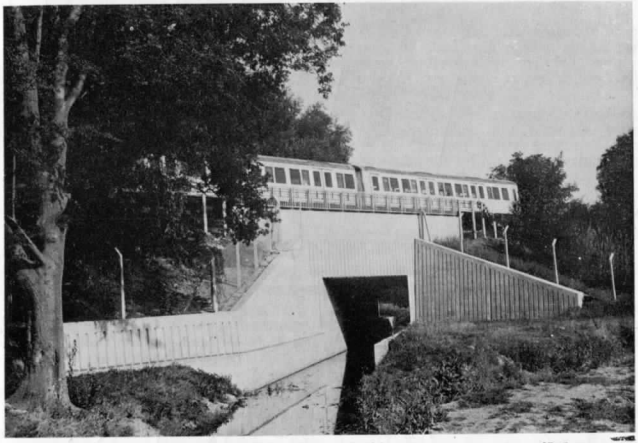
Front Cover: A Piccadilly Line train of 1959 stock leaving Rayners Lane on 1-6-71. [R. J. Greenaway

Below: Loco no. 35 at Lillie Bridge. Formerly Metropolitan loco no. 22, it was purchased by the Underground group in 1925 and scrapped in 1931. [Lens of Sutton



THE RECONSTRUCTION OF BRIDGE U24

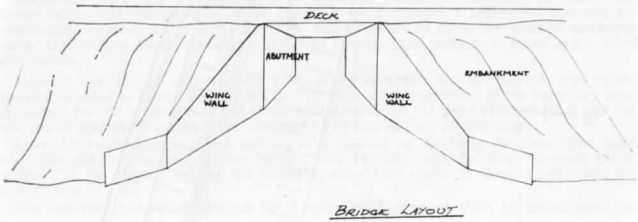
I. J. ROBINS



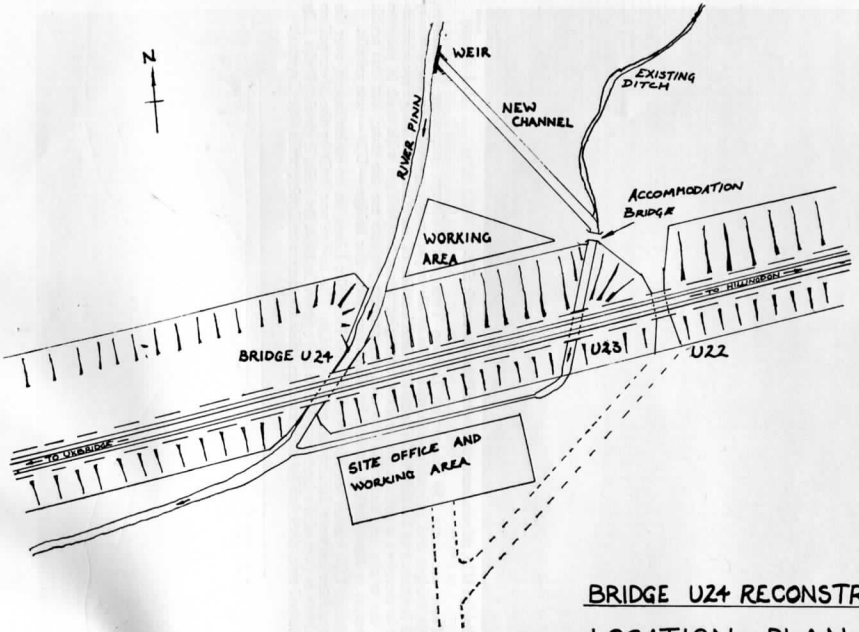
Bridge U24, as reconstructed, seen from the south side. [I. J. Robins

There are some 750 bridges on London Transport Railways (excluding footbridges, cable bridges and culverts), each with a finite life expectancy dependent on the intensity and frequency of loading and the rate of deterioration of the structure. Bridge reconstruction is therefore a continuous process, averaging about two bridges with work in progress on site at any one time. No two civil engineering projects are the same, but this article attempts to illustrate the method by which one particular bridge — U24 — was rebuilt.

Bridge U24 carries the Metropolitan and Piccadilly Lines, on an embankment, over the River Pinn between Hillingdon and Uxbridge. The bridge was built by the Metropolitan Railway as part of the branch to Uxbridge, opened in 1904. As built, it consisted of a fully ballasted steel deck bridge supported on brick abutments and wing walls (see diagram).



BRIDGE LAYOUT



BRIDGE U24 RECONSTRUCTION

LOCATION PLAN

I.J.R.

By the early 1970s the bridge inspectors were keeping a close eye on the structure. The bridge deck, wing walls and abutments were in a generally poor condition. The deck, which consisted of steel plates resting on four mild steel main girders, was corroded in some areas, and the abutments had leant towards each other and showed extensive cracks. Considerable movement had also occurred in the wing walls, and severe cracks could be seen in these.

Attempts had been made in the past to strengthen the bridge. The abutments had been propped apart with steel struts, and brick buttresses had been built against one of the wing walls. Further remedial work, however, was not considered to be financially worthwhile, and the bridge was included in the Bridge Renewal Programme as part of the Civil Engineering Department's Capital Budget expenditure.

Preliminary design work was carried out in the office of the Design and Construction Engineer to examine several alternative schemes for reconstruction, and discussions were held with the London Borough of Hillingdon, and the Thames Water Authority. The T.W.A. were reluctant to allow any reduction in flow under the bridge, particularly as the area is prone to flooding.

Six schemes were investigated, of which three were put forward to the Thames Water Authority for final consideration:

(i) Twin diversion tunnels through the embankment, formed using standard tube tunnel segments; and the filling in of the existing bridge.

(ii) An open ended reinforced concrete box within the existing structure, formed by cutting into the existing abutments so as to give minimal reduction in the river width.

(iii) An open ended reinforced concrete box within the existing structure, cast against the existing abutments, giving a permanent reduction in the river width. To compensate for this, a flood relief channel would be formed, passing under an adjacent bridge (U23) carrying the railway over an open ditch which already drained into the river.

Primarily on grounds of cost, the third option was selected and detailed design work began in the late spring of 1977.

The reinforced concrete box was to be cast against the existing concrete base slab and abutments after the river had been diverted temporarily under Bridge U23. The top of the box was to be lower than the existing deck, thereby enabling the new structure to be completed without interference to trains, and allowing the deck subsequently to be removed and replaced by fill up to formation level during an extended possession of the railway.

Risk of further movement of the abutments during reconstruction was reduced by incorporating the existing steel bracing struts into the concrete box. Design of the box section was aided by use of an analysis programme, run on one of L.T.'s computers.

The reinforced concrete wing walls were to incorporate a new channel for the river, and thus formed a J shape with the river flowing in the base of the J. When analysing the forces acting on the wing walls, the existing wing walls were considered as having no strength, thus giving an additional margin of safety. These walls, like the box, were to be cast against the existing structure.

Additional works for the reconstruction included permanent diversion of signal and power cables and the construction of the flood relief channel, a reinforced concrete accommodation bridge and a weir. The weir was provided to allow the river to discharge under U23 during flood conditions, and was formed from gabions — metal cages filled with rubble.

Tenders were invited early in 1978 from nine contractors and the contract was subsequently awarded to John Mowlem & Co. Ltd. Following completion of the necessary legal agreement for the construction and future maintenance of the flood relief channel and the granting of planning consent, work commenced on site in May of that year.

After the establishment of site offices, work started on diverting the river. The flood relief channel and accommodation bridge were finished, and the river diverted under bridge U23 by August, so that the channel under U24 could be cleared out ready for construction to start.

The extended possession was set for Sunday 3rd December 1978, by which time the

Above: View through the reconstructed bridge U24, looking south-west. [I. J. Robins

Below: Bridge U23 looking north, showing flood relief channel. The accommodation bridge, installed to give access to the working area, is visible through the arch.
[I. J. Robins

box had been finished and cable diversion had been completed. During the possession, the track was removed by the Permanent Way Department, and the existing steel deck was cut up with oxy-acetylene torches and removed by mobile crane. A bulldozer then deposited fill on to the top of the box up to formation level, the track was reinstated and signalling was restored.

Final work could now be completed. The wing walls and ancillary works were finished and the river diverted back to its original course. It only remained for the weir to be constructed and reinstatement works to be carried out before the contractor was able to leave the site at the end of May 1979. Finally the Permanent Way Vegetation Control Section tidied up the area and planted several new trees, replacing some that had been cleared for the work and others that had died of Dutch Elm disease.

Thus, in a total time of about two years for design and construction, one bridge was rebuilt at a total cost of about £300,000, providing a new structure with a life expectancy of over 100 years.

A DICTIONARY OF UNDERGROUND SLANG

N. H. G. MITCHELL

INTRODUCTION

It is well known that whenever a group of people are in regular contact and communication with each other, they will in time develop their own jargon words and phrases to cover those concepts they speak of most often, especially where there is not already a suitable, reasonably short, term in the English language. London's Underground is no exception to this principle, and over the years a large number of slang terms have come into use, denoting those things which railwaymen need to refer to most often in connection with their day-to-day work.

In this article, I have attempted to list the slang terms commonly in use on the Underground, as well as a few that have passed out of everyday use. Language is a living thing, and new terms are constantly coming into use, while old ones fall into neglect. On the Underground, this process has been helped over the years by the replacement of obsolete equipment and rolling stock with new types. Nevertheless, some of the terms in this list are of considerable antiquity, having been in use on the Underground for over 100 years, and, on other railways, even longer. Of course, the slang in use on the Underground in its earliest days would have been little different from that in use on other railways at that time, but over the years the Underground system has developed separately from other railways, to the point where it is now virtually self-contained. The development of Underground slang has paralleled this, and although some of the terms in this list are in use both on L.T. and B.R., the majority are only used on the Underground.

Some slang terms in use on the Underground are also to be found in general, non-railway usage, and these I have not included. I have also, broadly speaking, taken my definition of slang to exclude official L.T. usage. However, this alters over the years, so that every time the "official" name for something changes, the old name (if its usage survives in everyday speech) will by definition become slang, while the new "official" name (if it was previously in common use) will cease to be slang any more. This is another example of the way in which slang evolves.

Another problem of definition is that not all slang terms are used universally throughout the system. Although some slang terms are used and understood by all staff, others are restricted to certain locations and/or departments. In addition, some words are given slightly different meanings by different staff. I have not sought to include those expressions and meanings which are only in use among a very limited number of people, e.g. in one particular office or at one particular station. To list all these expressions, even if it had been feasible, would have added greatly to the length of the list without, I feel, much addition to its value.

Although I have tried to make this list as comprehensive as possible within the guidelines above, it is inevitable that some expressions have been omitted. (Part of the difficulty

in compiling a list such as this is that most of those who use slang do so without stopping to think about it, and so when they come to make a list of slang terms, they do not recall some of the expressions that they use regularly.) I would be grateful to hear of any omissions or errors in the list, for use in a possible updated version of the Dictionary.

ACKNOWLEDGEMENTS

I would like to acknowledge the valuable assistance I received in compiling this list, from the following individuals who gave me lists of slang words and phrases. Without their contributions, this list would have been only a fraction of its present size, and I am most grateful to them for their help: V. Badman, D. J. Burton, D. J. Carson, P. R. Connor, K. Goldsworthy, B. R. Hardy, D. Lomas, A. W. Mahon, K. Rennie, I. J. Robins, D. E. Salmon, T. B. Scott, J. Solon, D. Taylor.

Action Town	See Stations.
Aer Lingus	Switch and Crossing tamper S.C. 765 (so called by Irish Permanent Way inspectors, from the complexity of its controls).
A.E.T.	Automatic Equipment Technician.
Aladdin	Handlamp.
All-in-line	Old style trainstop as used on C.L.R. — a type of "Long Tom".
Alps	Raised sidings at Neasden and Ealing Common depots.
A.M.	Area Manager.
Apply the rule	To "trip past" a signal, i.e. pass it at danger under the "stop and proceed" rule (G7).
Arbor lights	Junction route indicators (from their resemblance to branches of a tree) — also known as "Harbour lights", "Lunars".
Arnos	See Stations.
A.T.O.	Automatic Train Operator or Operation.
Auto	(1) An automatic signal. (2) An automatic ticket machine. (3) A telephone on the L.T. internal automatic system, or the system itself.
Awayday	A day's unauthorised absence from work.
Back shunt	Propelling a train.
Back tripped	(Of a train) irregularly tripped by operation of the rear tripcock.
Baker	(1) See Stations. (2) Bakerloo Line.
Bakerstrasse	See Stations.
Ballast train	Any Engineer's train (former official name).
Bang them up	To shunt loose or uncoupled vehicles.
Banjo	Shunt signal.
Battery, Battery car	Battery Locomotive.
Beaches	Roads at back of Neasden Depot.
Belsize	See Stations.
Binocular	Insulator on receptacle box for "leads" (from its shape).
Bionics	1973 stock.
Blocking back	(Trains) queuing up on the approach to a junction or obstruction.
Blow up	To sound a train whistle.
Blower	Telephone, or train telephone.
Board	Signal.
Board, The	London Transport Executive (formerly London Transport Board).
Bobbing signal	Defective signal with aspect repeatedly changing from red to green and back again.
Bobby	Signalman.
Bolt hole	Cross passage between tube running tunnels.
Booking office	Ticket office.
Bowled	(Of staff) run over by a train.
Boss key	Driver's control switch key (with raised boss).
Boss man	(Group) Station Manager.
Boy driver	Newly passed-out Guard-Motorman or Motorman.
Boys' club	British Transport Police.
Boys' line	Metropolitan Line.

Breakaway	Train becoming divided accidentally.
Breaker	Circuit Breaker.
Bridge, The	Lillie Bridge.
Broadway	See Stations.
Bruce's paper	L.T. News (from when J. G. Bruce was Chief Operating Manager).
Burst	Loss of main line or train line air pressure.
Butterfly cock	External door cock (from the shape of its handle).
Button	Master Controller.
Button pusher	Guard.
C 11	Rule regarding protection of staff working in tunnels (formerly number "234").
Caley Road	See Stations.
Call a train over	To make an announcement to passengers in each car of a train.
Camden	See Stations.
Caught for a job	Said of spare trainmen when given train running work to perform.
Centre the key	To move the reverser key into the central, "off", position (illegal when coasting).
Cess	The space at either side of the trackbed, clear of all tracks.
Chalfont	See Stations.
Chance it again	See Stations.
Charing wangle	A fiddle involving two District Line crews exchanging trains at Embankment.
Charlie	See Neasden Roads.
Check down	To reduce speed.
Checking back	(Trains) blocking back.
Cherries	Current rail gap indicators.
Chopper	Thyristor, as used in train control (because it "chops" electric current).
Christmas card	Guard.
Clause 14 bloke	See "Traveller".
Clockworks	District Line trains, especially among Piccadilly and Circle Line traincrews.
Cock	See Stations.
Code destroyer	Passenger Emergency Pushbutton (on Victoria Line platforms).
College boy	Area Manager originating from 55 Broadway.
Come off for grub	To take a meal relief.
Comic, The	L.T. News.
Concorde	A fan at Moorgate station.
Cosh it	To make an emergency brake application using the driver's brake handle.
Cowboy Line	East London Line.
Crasher	L.M.R. Watford D.C. unit (after noisy Oerlikon stock).
Creeper	A 3-aspect (draw-up) signal, allowing the train to pass at reduced speed — see also "Permissive".
Cross, The	See Stations.
Crumpet line	Diagonal stripe on women's season tickets.
D.A.	Disturbance Allowance (e.g. for "Travellers").
Dark money	Unsocial Hours Allowance.
D.B.	Disciplinary Board (to be "D.B.'d" is to appear before one).
Dead early, Dead late	Used of duties covering the first and last trains.
Deadman's (handle)	Master Controller (former official name).
Det	Detonator.
D.I.	Area Manager (formerly Divisional Inspector).
Dick	District Line.
Diddy box	Small disconnection box used with signalling equipment.
Dilly	Piccadilly Line.
Dip	Flyunder.
Dirt relief	See "Physical".
Division, D.M.O.	Divisional Manager's Office.
D.M.R.	Deferred Meal Relief (allowance paid if trainmen's meal relief is delayed).

Do a mucho	(Of staff) to exchange duties (from **Mu**tual **C**hange **O**ver — see also "M.C.O.").
Do a pair	(Of Station or Yard Manager) to adjust crews on two trains.
Dod	Shunt signal.
Dogs are in, The	Said when safety gear on a lift has operated.
Dog's collar	Part of a Trip Valve.
Dolly	Shunt signal.
Double bubble	Double shift (16 hours) for station staff if not relieved.
Double end	To use two crews, one on each end of a train, to obtain quick turnround at a reversing point.
Double rest	Two rest days in one week.
Doubling back	Changing to an earlier shift with no intervening rest day, thereby getting a short rest period between shifts (also called "Dropping back").
Down	Late (as in, e.g. "three down" or "three minutes down").
Down the hole, Down the pipe	Phrases used when referring to tube tunnel sections.
Downstairs	East London Line. "Upstairs" is the Hammersmith and City Line (used by Barking and New Cross crews).
D.R.	District Line (District Railway).
Draw up to the peg	To pull up to a stop signal.
Drop a track	(Of a train) to de-energise a track circuit on entering a section.
Drop off	(Of a signal) to clear.
Drop off signal	(1) Signal that clears on approach. (2) See "Pop up".
Drop on	(Of a train) to appear on the signalman's track diagram or train describer.
Drop on signal	See "Pop up".
Drop out	(Of a train motor) to cease working, e.g. due to operation of circuit breaker.
Drop the button, Drop the deadman's, Drop the handle	To release the "Deadman's handle". ("Drop the handle" is also used in connection with lift controllers.)
Drop the lot	To make an emergency brake application.
Dropped ends	Car ends bent down by rough shunting or coupling.
Dropping a short	Method of fraudulent travel, where a regular passenger obtains two short-distance season tickets to cover the end sections (but not the middle) of his journey (formerly also possible using return tickets).
Dropping back	(1) See "Doubling back". (2) Stepping back (see "Stepping up").
Dry turn	A shift with a guard or motorman who rarely or never makes tea.
Dud	Defective (train).
Dummy	Shunt signal.
Edward	See Neasden Roads.
Elephant	See Stations.
Elk	Crane device on flat wagon, for lifting rails.
E.P.	Electro-Pneumatic (brake).
E.P. blow	Audible warning caused by electrical defect on E.P. brake.
Extension Line	See "Wood Line".
Family Income Supplement	Fault Isolating Switch (F.I.S.).
F. and D.	Failure and Delay (form).
Fast	(Of a station) normally approached at high speed.
Fiddle sheet	Utilisation of Train Crew forms.
Fitter	Car Examiner (formerly official name).
Flaggy, Flagman, Flagsignalman	Handsignalman or lookoutman.
Flat	(1) Damaged part of a wheel tyre, worn flat by skidding. (2) Any rail or flat wagon.
Fleet Line	Jubilee Line.

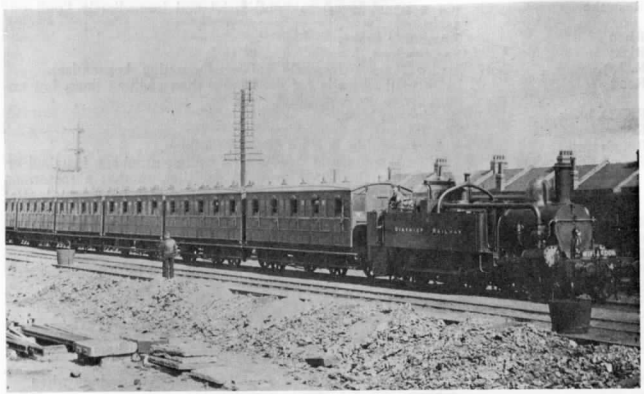
Fluffer	Member of tube tunnel track cleaning gang — generally female.
Fluffy link	Neasden crews available for test runs, etc., as well as normal duties (see also "Long link").
Fly shunting	Loose (i.e. uncoupled) shunting.
Fogger	Fog signal.
Four foot	The four-foot way, i.e. the space between the running rails of one track.
Four-o-nine-one, The	Agreement no. 4091, regarding the use of Barking and Upminster crews.
Freddie	See Neasden Roads.
Fried eggs	See "Poached eggs".
Gate, The	See Stations.
Get a touch	To receive an electric shock from the live rail.
Get rid of	To send (a train) off.
Ghost	See "Pop up".
Gippo	Post Office telephone (as opposed to "Auto"). (From G.P.O.) — also called "Po phone".
Give her a blow, Give her a splash	To apply Westinghouse brake.
Give it a notch	To apply first-notch power briefly to a train, with brakes applied, so as to call guard's attention, or shake the train to assist a "sticky door" to close.
Give it the lot	To make an emergency brake application.
Glow worms	District Line crews' name for Circle Line trains (from their headlights).
Go back	(Of a signal) to return from green to red. When this happens in view of the driver of an approaching train, this is called "going back in (one's) face".
Go down the road, Go up the road	To be interviewed by divisional or traffic manager over a misdemeanour.
God	Line Controller.
Golders	See Stations.
Gone to bed	(Of a train) stabled.
Green, The	See Stations.
Groupie	Group Manager.
H. and C.	Hammersmith and City Line. Also called "Hot and Cold".
Handle	Master Controller.
Handle winder	Motorman.
Harbour lights	See "Arbor lights".
Harpic signals	See "Round the benders".
Harrow-on-the-bump	See Stations.
Have a rest day	To work on one's rest day, i.e. to have a "rest day on the job".
Head shag, Head twit	Headquarters Controller.
Heathrow, Heathway	See Stations.
Heavy stop	One with rapid deceleration.
Hendon	See Stations.
Herringbone	Telephone.
Hi-Vi	High Visibility orange vest.
High Street, High Street Ken, Highbury	See Stations.
Hiking	(Of traincrew) learning a depot.
Hit a stick	To overrun a signal at danger, being tripped.
Hopper	Ballast Wagon.
Horsebox	Q23 stock, or its driving cab (from the crampedness of the cab).
Hot and Cold	See "H. and C.".
Houston control	Cobourg Street (Euston control).
Hungry twenty	District Line Annual Leave Cover traincrew who work 40-hour week (no Sunday or overtime earnings).
Hyde Park	See Stations.
I.M.R.	Interlocking Machine Room.
Intelligentsia Brainbox	55 Broadway (facetious).

Iron work	Major part of point work at junctions (also called "Thick work").
Iron worm	Tube stock train.
Ivory tower	55 Broadway (facetious).
Jamroller	See "Steamroller".
Jenny	(1) See Neasden Roads. (2) Double-ended South Acton shuttle car.
Job	The railway or the train service. Thus "the job's up the wall" means that the train service is disrupted.
Joint men	Staff on the Amersham branch of the Metropolitan Line (formerly employed by Met. & G.C. Joint Committee).
Juice	Current, especially traction current.
Juice box	Current rail indicator box.
Juice rail	Current rail.
Jumper	(1) Overhead trolley lead in depot. (2) Travelling Ticket Inspector.
Jumping point	Undesirable station where a newly promoted stationman works, pending a vacancy for his new grade at a more desirable station.
Katie	See Neasden Roads.
Key start-up	Key for starting (and stopping) an escalator.
Klondyke	Name given to certain sidings in Neasden Depot. (Now official.) Origin obscure, but maybe so called because there was gold (in the form of wealthy passengers' lost property) to be picked up in the Aylesbury and Quainton Road trains which stabled there in steam days.
K.P. Nuts	See Stations.
L.A.	Lengthy Absence (form).
L.A.1	Reprimand for lateness and/or absence from Station Manager.
L.A.2	Similar but more serious reprimand from Area Manager.
L.A.3	Similar, but even more serious, interview with Divisional Manager.
Lambeth	See Stations.
L. and A.	Late and Absent staff return (form).
Lead	Overhead trolley lead in depot.
Leave a train over	To hold it (generally at a reversing point) so it misses a round trip in order to regain its correct path in the timetable.
Leicester	See Stations.
Lifts and escs	Lifts and Escalators Department.
Littleboy	Survey implement placed next to a rail, for use in checking alignment of track (from workshop drawing produced by a Mr Littleboy).
Lizzie	See Neasden Roads.
Long link	Neasden crews available only for normal duties (see also "Fluffy link").
Long Tom	Old-type tube trainstop.
Lunars	"Arbor lights" (from their colour, lunar white).
M. and B., Mary	See Neasden Roads.
M.C.B.	Miniature Circuit Breaker.
M.C.O.	Mutual Change Over — also called "Mutual". (See also "Do a mucho".)
Met	Metropolitan Line.
Met main	See "Wood Line".
Milking the tubes	Ticket office fraud in which preprinted card tickets are issued, out of numerical order, from the middle of the tubes containing unsold stock, instead of from the bottom. (The booking clerk pockets the money and the shortage is not detected until all tickets below the ones removed are sold.)
Mill Hill	See Stations.
Mixer flat	Flat wagon bearing cement mixer.
M/M	Motorman.
Muck train	Engineer's train that runs at night in tube tunnel sections, removing rubbish and clearing drains. Also called "Rubbish train".

Mutual	See "M.C.O.".
Neasden Roads	At Neasden North cabin there are nicknames for certain tracks, taken from the track letters. Thus track JD is known as "Edward", JK is "Jenny", LC is "Charlie", LF is "Freddie", LK is "Katie", LL is "Lizzie", LM is "Mary", and MB is "M. and B.".
Neggy	Negative rail.
Nine-eight-one, The	Agreement no. 981, regarding usage of spare men at depots.
Nomo	Fully Automatic Control of Trains (from **No-M**an **O**peration, after O.M.O.).
Off	(Of a signal) clear.
Off sheet	Said of a signalman who has made an error in his Train Register.
Off the book	(Of the train service) running out of timetabled order.
Off the front(s)	Demoted from Motorman to Guard.
Off the pipes, Off the road	Derailed.
Old gobblers	C69 stock.
Old man	Line controller.
O.M.O., Omo	One-man operation.
On	(Of a signal) at danger.
On earlies, On middles, On lates, On nights	On an early, middle, late or night turn.
On juice	Picking up electric power from the live rails.
On the back	Working as a guard.
On the block	Held at a red signal, due to the section in front being occupied.
On the board	(Of a train) having appeared on the train describer or indicator board.
On the cushions	(Of train crew) travelling as passengers while on duty, e.g. from booking-on point to pick-up point.
On the deck	Derailed.
On the East/North/South/West	Eastbound, Northbound, Southbound or Westbound.
On the floor, On the ground	Derailed.
On the front(s), On the handles	(Especially of a Guard-Motorman) doing some train-driving work.
On the panel	(1) Off sick. (2) On the trainers' panel, i.e. qualified to train other staff in the same grade.
On the pitch	(Of Station Foremen, etc.) doing platform duty.
On the wall	(Of a train) stabled in no. 25 road at Whitechapel.
One-arm(ed) bandits	Stock with combined traction/brake controller handle.
One back	Reversing the motors, especially to stop train in emergency.
One in the dirt	A train in a sand-drag.
One off, One off the road	A derailed train.
One on	Train approaching.
One-rounder	Duty consisting only of one round trip.
One under	Person under train.
Open up	(1) To open train doors. (2) To accelerate a train.
Ops room	Station operations room.
Outdoor	(Of a section of line) in the open.
Over the top	(At the North end of Neasden Depot) via the Southbound Depot Road, rather than the flyunder.
Oxford Workhouse	See Stations.
Padded cell	Original C. & S.L.R. car.
Paddle	(1) Short-circuiting device. (2) Ice scraper (for use on current rails).
Peak	Peak hour.
Peg	Signal.
Permissive	Draw-up signal (formerly the official name). Also called "Creeper".

P.G.	See Stations.
Physical	Physical Needs Relief, i.e. lavatory relief for trainmen. Also called "P.N.R.", "Dirt relief".
Picc, Piccy	Piccadilly Line.
Pick up	(1) (Of a train) to skid on braking (or acceleration), especially due to wet rails. (2) (Of train crew) to take over a train. (3) (Of a track circuit) to re-energise after a train has passed. (4) Method of giving a signalman an emergency release.
Pictures	Sidings at Northfields (next to the cinema).
Pig's ear	Small subsidiary signal aspect, designed to be viewed by motormen of trains drawn right up to the signal.
Pigtail	Braided copper lead on train, connecting collector shoe to power cable — also called "Shunt".
Pipe	Tube tunnel.
Pitch in	Collision between trains.
Plasser	Tamping machine.
P.N.R.	See "Physical".
Po phone	See "Gippo".
Poached eggs	External door indicator lights on trains. Also called "Fried eggs", "Scrambled eggs".
Policeman	(1) A blind trainstop, i.e. one not associated with a signal aspect. (2) A signal half-way down a platform, especially a "creeper".
Poor Mark	See Stations.
Pop up	Signal that does not illuminate until a train approaches. Also called "Ghost", "Drop on", "Drop off".
Porter(s) button	External button at end of car, for closing doors.
Possy	(Pronounced "pozzy") positive rail.
Pot	Insulator.
P.P.	Penalty Payment (e.g. for a "Rest day on the job").
Priv	Privilege (ticket).
Pull down	To stop a train by operating the passenger emergency brake valve (also called "Pull the handle").
Pull off	To clear a signal (generally by pulling the lever).
Pull the handle	See "Pull down".
Pull the strings	To operate Brake Release Valves on a train.
Pump	Train compressor.
Pump up	To recharge air reservoirs on a train.
Punch a lift on the button	To move it (for testing purposes) by operating contactors manually. (See also next entry.)
Punch up	(1) To accelerate (a lift) manually in the event of failure (see also previous entry). (2) To transmit a train's description by depressing the button on the train describer.
Punching turn	A stationman's duty consisting entirely of supervising entry barriers, and involving no excess fares.
Push back	To propel a train, or the act of so doing.
Push out	Assistance given to a defective train by the train in rear.
Put back	To return a signal to Danger (generally by putting the lever back to the Normal position).
Put it away	To stable a train.
P.W., P. Way	Permanent Way Department.
Q.A.	Qualifying Allowance.
Quike	Quad-cycle: four-wheeled cycle used for track inspection.
Rail	In a depot shed road, to move (a train) out on to the live rails, using the overhead trolley lead.
Rapid	Rapidprinter ticket machine, or a ticket issued by one.
Rayners	See Stations.
R.D.C.	Rest Day Cover.
Red-eyed devil, Red-eyed monster	The Line Controller (from the red visual illuminated on telephone switchboards when the controller is calling).

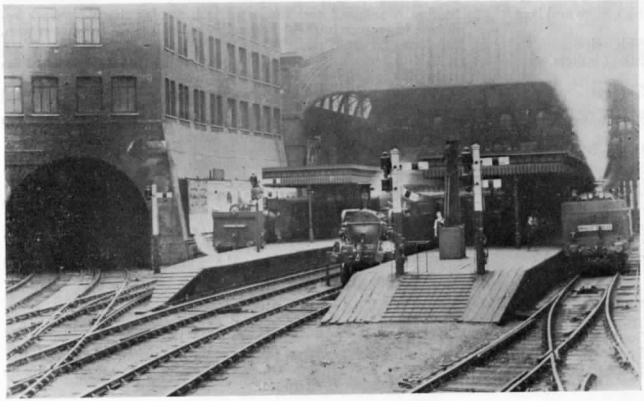
Rest day on the job	One's normal rest day spent working (another rest day in the same week is given in lieu, and a Penalty Payment made).
Rest Home	See Stations.
Restroke	(Of a signal lever) to "put back" and immediately "pull off" again.
Rheo	Rheostatic brake.
Ricky	See Stations.
R.O.A.	Junior Trainee (formerly Railway Operating Apprentice).
Road	Line: used officially for lines other than running lines, but unofficially to cover all lines.
R.O.D. book	Booking-on book.
Rotten Old Gate	See Stations.
Rough turn	A duty comprising a lot of train working.
Round the benders	Additional automatic signals with 4-digit numbers, installed on curves after the 1953 Stratford collision, so that a motorman always has an aspect in sight. Also called "Harpic signals", after the lavatory cleaner's claim to clean "round the bend".
Rounder	Round trip.
R.T.D.	Returned to duty.
Rubbish train	See "Muck train".
Rule book	Test of Rule Book knowledge, administered by Area Manager.
St Jim's Park	See Stations.
Sardine opener	Pin to unlock dome type lift controller.
S.C.D.	Short Circuiting Device.
School, The	White City Railway Training Centre.
Scrambled eggs	(1) Gold braid on hats, or the wearers of such hats. (2) See "Poached eggs".
Screw down	To secure a train, applying the handbrakes, especially when stabling.
Second messroom	The pub (facetious).
See Mum Immediately	See "S.M.I.".
Semi	Semi-automatic signal.
Set number	Train running number.
Sewer	Northern Line.
Shagwell	See Stations.
Shunt	See "Pigtail".
Sick lame and lazy	Station Managers' and Inspectors' phrase for the paperwork required in connection with staff who have time off for any reason.
Sideswipe	Sideways-on collision.
Silver bullets	1956 and 1959 tube stock (phrase used on the Piccadilly Line, especially when they were new).
Six foot	The six-foot way, i.e. the space between two adjacent running lines.
Skateboard	Wheeled trolley (not rail mounted) used for removing baskets of rubble from track reconstruction works in tube tunnels.
Skater	Escalator.
Skid	Locked wheel skid.
Sleet car	Electric Sleet Locomotive.
Slip one at the Park	To reverse a train North to South in the Northbound platform at Queen's Park, in order to make up for late running.
Slow	(Of a station) normally approached at comparatively low speed.
S.M.	Station Manager (formerly Stationmaster).
S.M.I.	Station Manager's Instructions, i.e. a duty where the crew work according to S.M.'s instructions. Also called "See Mum Immediately".
Snake	Ribbed insulated multicore cable (as seen under conductor rails).
Snip turn	A duty considered to be a good one.
South Ken	See Stations.
Special duties	Euphemism for wangles, fiddles, or other unofficial goings-on.
Splits	Split turns, i.e. duties consisting of two periods separated by an interval of 2 hours or more.



Above: Loco no. 4 heading a District train of 4-wheel carriages in the early years of this century. [Lens of Sutton

UNDERGROUND

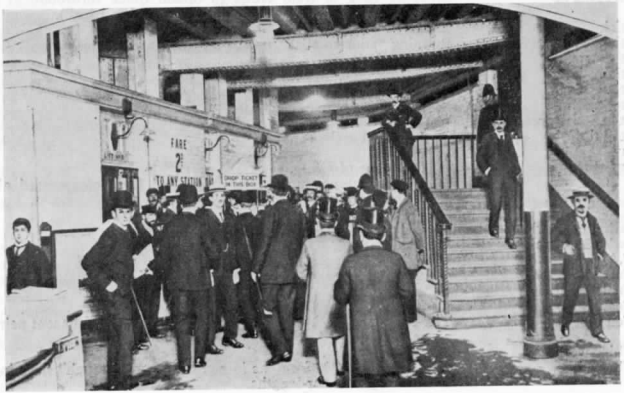
Below: Aldgate Station at about the same time. [Lens of Sutton



Above: Train of original G.N.C.R. stock at Finsbury Park. [Lens of Sutton

TUBE

Below: Bank (C.L.R.) booking hall, c.1902. [L.U.R.S. collection



Sports centre	Signal Engineer's Report Centre.
Sputnik	6-car COP stock train consisting of three 2-car units (all motor cars, so very fast).
Star guard	Guard-Motorman.
Starter	Starting signal.
Stations	Slang names for stations fall into several categories: those where part of the station name is dropped, particularly the last part; those where the station name is contracted in some other way; and those where stations are given nicknames, often by replacing one or more of the words in the "official" name by other words with a similar sound. This last type is particularly common among ticket office staff. A full listing of all slang station names would be impracticable, but some of the most common examples are given below. (1) Cases where the latter part of the name is dropped: Arnos (Grove), Baker (Street), Belsize (Park), Camden (Town), Chalfont (& Latimer), Cock (fosters), Elephant (& Castle), Golders (Green), Heathrow (Central), Hendon (Central), High Street Ken (sington) — also called "High Street", Highbury (& Islington), Hyde Park (Corner), Lambeth (North), Leicester (Square), Mill Hill (East), Rayners (Lane), South Ken (sington), Stonebridge (Park), and West Ken (sington). (2) Other examples: Action Town (Acton Town); Bakerstrasse (Baker Street); Broadway (Ealing Broadway); Caley (rhymes with "Sally") Road (Caledonian Road); Chance it again (Chancery Lane); Harrow-on-the-Bump (Harrow-on-the-Hill); Heathway (Dagenham Heathway); K.P. Nuts (Kilburn Park); Oxford Workhouse (Oxford Circus); P.G. (Parsons Green); Poor Mark (Moor Park); Rest Home (Ruislip Gardens); Ricky (Rickmansworth); Rotten Old Gate (Notting Hill Gate); St Jim's Park (St James's Park); Shagwell (Shadwell); Swiss Sausage (Swiss Cottage); The Cross (New Cross or Charing Cross); The Gate (New Cross Gate); The Green (Parsons Green); White Tittie (White City).
Steamroller	Line Controller (also called "Jamroller").
Stepping up	Stepping back of train crews to obtain quick turnround at a terminus in peak hours (also called "Dropping back").
Stick	Signal.
Stick to stick	Running "stick to stick" means stopping at all signals.
Stick trouble	Signal trouble.
Sticky door	Slow door.
Stonebridge	See Stations.
Stood down	Suspended (e.g. pending an enquiry).
Stop and proceed rule	Rule G7 (see "Apply the rule").
Stop the job	To interrupt train services.
Sub	Substation.
Swinger	(1) Shoe out of alignment. (2) Bracket supporting cables, suspended from compressed air main on open sections of line. (3) Unbraked unit on a train (due to a defect).
Swinging window	Hinged window that is improperly secured.
Swiss Sausage	See Stations.
T.A.	Training Allowance.
Take the dolly	(Of a train) to make a movement authorised by a shunt signal.
Tank	"F" stock.
Tech	Technician.
Ten foot	The ten-foot way, i.e. the wide space between two adjacent pairs of tracks.
Thick work	See "Iron Work".
Through	Overshooting a platform, as in e.g. "two cars through" meaning overshot by two car-lengths.

Through the limits	(Of a lift) overshooting.
Tin opener	Device provided in depots to remove snow from car roofs (so called because if set too low it removes the roof as well).
Tip out, Tip 'em out	To detrain passengers, especially when a defective train is withdrawn from service.
Toy trains	Metropolitan Line crews' name for Jubilee (formerly Bakerloo) Line trains.
Track	Track circuit section.
Traffic Controller	Line Controller (former official term).
Trap points	Catch points (also an official term for certain points in Upminster Depot).
Traveller	Trainman temporarily working at a depot other than his own nominated depot, after promotion to a higher grade, pending a vacancy for this grade at his own depot. (Also known as a "Clause 14 bloke".)
Trip	Tripcock.
Trip past	See "Apply the rule".
Trouble card	Form provided in driving cabs, for reporting train defects.
Trumpet	Loudhailer.
T.T.I.	Travelling Ticket Inspector.
Tunnel rats	Tube line trainmen.
Turn	Duty.
Twirly	Old age pensioner using concession ticket (or the ticket itself). (From their habit of appearing at ticket office windows shortly before the times these tickets are available, and asking, "Am I too early?") See also "Womble".
Two-three-four	See "C11".
Two-two-two	British Rail Headquarters: 222 Marylebone Road.
Undum	Uncoupling Non-Driving Motor car (U.N.D.M.).
Up	Early (as with "Down", q.v.).
Up the hole	In a tube tunnel siding, especially at Wood Green.
Up the neck	In the shunting neck at Golders Green.
Up the spout, Up the wall	(Referring to the train service) disrupted. See "Job".
Upstairs	See "Downstairs".
Vic	Victoria Line.
Vickers	"T" stock.
Vulture	See "Womble".
W. and B.	See "Works and Bricks".
Wangle Sheet	Train analysis sheet.
Wash	Washing machine.
Wasps	Permanent Way staff in High Visibility jackets.
Watford Pullman	Watford Tip train.
Weasel	Diesel train, especially D.M.U. sharing Met. tracks.
West Ken, White Tittie	See Stations.
Wind up	To move the Master Controller handle round from the off position to a motoring position.
Womble	Old age pensioner, especially one travelling at concessionary fare. Also known as "Vulture". (See also "Twirly".)
Wood Line	Metropolitan Line from Baker Street to Uxbridge, Amersham, Chesham and Watford (originally Metropolitan & St John's **Wood** Railway). Also called "Met main", "Extension Line".
Work through	To work through the middle of a split turn.
Works and Bricks	Works and Buildings Department (also called "W. and B.").
Wrong one off	Signal cleared for incorrect route.
Yard	Depot.
Yardmaster	Yard Manager or (on District Line) Station Manager (former official term). Also called "Y.M.".
Yellow Peril	Supplement to Traffic Circular relating to signalling arrangements (printed on yellow paper).
Y.M.	See "Yardmaster".

CONTROLLING A RAILWAY

BRIAN R. J. HARDY

BRIEF HISTORY

The history of traffic control can be traced back to steam days on the District Railway when a Chief Inspector was located at Earl's Court and was responsible for the running of the train service throughout the line. Failures were dealt with after the telegraph office had been informed (also located at Earl's Court) and the booking boy in the telegraph office advised the appropriate emergency men of the trouble. A better system of traffic control was introduced when the District Railway was electrified in 1905 whereby certain key points were given plug-in telephones direct to the Controller. This system too had its limitations and in 1912 a number of direct telephone lines were introduced to important locations.

Control office history on the tube lines dates back to 1900, when the Central London Railway was opened, which had its control office at Wood Lane. The City & South London had no control office until 1907, when an office was opened at Moorgate Street which coincided with the extension of the line, north from Angel to Euston. The three lines which comprised the London Electric Railway (Bakerloo, Piccadilly and Hampstead) were, from 1909, controlled from offices at Leicester Square, above the station. However, from their openings until 1909, the control office for the Bakerloo was at London Road, and at Leicester Square for the Piccadilly. The location of the Hampstead line control office from 1907-1909 is not known by the author.

After the L.P.T.B. was formed in 1933, it was decided to move all control offices to one central point, above Leicester Square station being chosen. The old L.E.R. offices were rebuilt to accommodate all Traffic Controllers; the Metropolitan and Bakerloo from 12.12.39, District and Piccadilly from 28.1.40, Northern from 14.1.40 (which also had the Central on night duty) and Central from 17.1.40 (not on night duty). When the Central Line extensions were opened after the war, the Central Line became manned day and night. Also located at Leicester Square in the control office complex was the Head Controller and Information Assistant.

This system continued for over 20 years, until a change of control office policy resulted in decentralisation, with the Traffic Controllers being located at the respective divisional offices. The first to be moved away were the Metropolitan and Bakerloo to Baker Street and the Head Controllers and Information Assistants to 55 Broadway, all in 1962. Since 1963 when Earl's Court Regulating room was opened, progress has been made on closing signal cabins on the District and Piccadilly lines in favour of signalling being controlled by Programme Machines and monitored from the Regulating room by Train Regulators. In designing the Regulating room at Earl's Court, it was planned that the District and Piccadilly line Traffic Controllers should also be located in the Regulating room on a higher level than the Regulators to have an overall view of the diagram with the position of all the trains; this was achieved in 1970. However, total control of District and Piccadilly line signalling from Earl's Court has not yet been completed, and at the time of writing, only South Harrow/Heathrow/Ealing Broadway/Putney Bridge to King's Cross/High Street Kensington/Tower Hill is included on the diagram. However, this currently has a "blank" section from Green Park to west of King's Cross.

The Northern Line had Programme Machine controlled signalling before the District and Piccadilly lines and this was monitored from a Regulating room at Leicester Square, which was located off the subway between the southbound Northern Line and eastbound Piccadilly Line platforms. When the Morden and Tooting areas were converted to Programme Machine operation, this could not be accommodated in the (then) current Regulating room at Leicester Square, and was installed next to the remaining Traffic Controllers above Leicester Square station in the vacant position that was formerly occupied by the Metropolitan and Bakerloo Controllers before they were moved to Baker Street. It can thus be seen that it would not have been possible to establish a Regulating room including Traffic Controllers at Leicester Square without costly major alterations. It was also decided that the Victoria Line then under construction would have Programme Machine signalling, and that the new line would be merged with the Northern Line for administrative purposes. A new Control/Regulating room and Divisional office was then planned, to be

located on the corner of Euston Street and Cobourg Street near Euston station. From the opening of the Victoria Line its Controllers were located in the new building (1968) and they were followed in 1969 by the Northern Line Controllers. In the meantime, the Northern Line signalling was progressively transferred from the two Regulating rooms at Leicester Square to Cobourg Street as were the few outstanding areas on the Northern Line that were still controlled by signalmen in signal cabins.

Thus, after the transfer of the District and Piccadilly Line Controllers to Earl's Court in 1970, the Central Line Controller was left on his own at Leicester Square in Transad House (as the building above the station was named). There were plans in the 1960s for the Central Line control office to be relocated in the (then) Divisional offices at Oxford Circus (Western House), but these premises were unsuitable. However, when the Head Controllers moved to 55 Broadway in 1962, their new direct telephone line to the Central Line Traffic Controller was in fact labelled as being to Oxford Circus. In 1977, the Central divisional offices moved from Oxford Circus to Baker Street, on the same floor and opposite the Metropolitan and Bakerloo division. With the imminent opening of the Jubilee Line, the administration of the Bakerloo Line was transferred to the Central Line from 29.1.79 and the Metropolitan Line then took on the Jubilee Line. The Central Line control office was moved to Baker Street on 21.5.79.

Plans are in hand for re-centralisation of control offices again, bringing the situation back to the 1940-62 period. A complex of control offices is planned at Baker Street, which will mean the Northern and Victoria, District and Piccadilly and the Head Controllers/ Information Assistants joining the Metropolitan/Jubilee and Central/Bakerloo controllers already at Baker Street. The (then) Metropolitan and Bakerloo controllers were transferred to a temporary office from 15.6.75 at Baker Street, up one floor, where they remain today. So far, no further structural work on the new complex has been done.

The existing control offices today thus fall into two categories:

1—The modern Regulating rooms at Earl's Court and Cobourg Street where the Controller has the added advantage (incomplete on the District and Piccadilly) of seeing the position of the trains on his line.

2—The "old fashioned" (now temporary) control offices at Baker Street where there are no visual indications.

When the new complex is complete at Baker Street, it is intended that ultimately, each controller will have a Visual Display Unit (V.D.U.) enabling him to see all or part of his train service, as required.

WHY CONTROLLERS ARE NECESSARY

The majority of Rapid Transit systems throughout the world have traffic controllers, and the reason in all cases boils down to the fact that even the best of equipment, whether it be on rolling stock or signalling, is liable to develop a temporary defect, and the trains all carry passengers.

If a defect arises, or if staff or passenger action occurs which interrupts the scheduled flow of trains, then some form of emergency intervention is necessary. If no intervention were made in the train service until the incident had been remedied, the effect would be that trains would queue up one behind the other, behind the incident, and trains in front of it would proceed ahead with an ever-widening gap behind them.

With a delay of only a few minutes at a key station in the peak period, the train being delayed will find, that once on the move again, progress at successive stations will be delayed due to the congested platforms and ever increasing number of passengers on an already "crush-loaded" train. The original delay, say of four minutes, could become, by the time the train reaches its destination, 15 minutes or even more. At the same time, trains are catching up with the one initially delayed, causing a queue of trains behind.

It is possible that intervention in the train service could be done by signalmen or regulators or by Station Managers at junction or terminal stations. This would be satisfactory under normal conditions, but not in a state of disorganisation. At such times, one person in a central point is required to know all that is happening throughout the railway, where train diversions or curtailments have been made so that all key points on the line may be advised accordingly. Local signalmen, regulators or Station Managers could not do this and be fully aware of all action taken throughout the line.

THE WORK OF THE CONTROLLER

The task of the Traffic Controller is to supervise the railway under his control on a day-to-day basis and to organise remedial action to minimise the effects of unforeseen emergencies, and, when making a decision, to consider its effects on train services, passengers and staff. The Controller must thus be in a position to know the overall picture of the railway, especially during periods of service interruption and disorganisation.

To enable the Controller to do his job, he is given certain limited equipment. During the course of each shift, each Controller maintains a **Log Book** which is kept in time order detailing messages received and what action was taken. The log book may be required by the Railway Inspectorate of the D.O.T. in the event of an enquiry into a major incident. He is provided with **Diagrams** of signalling, track layouts, bridge locations, traction current and the necessary isolating facilities, escalators and lift current supply and station lighting, and the **Rule Book** and relevant instructions for the safe working of the railway.

The Traffic Controller has a complex telephone panel with direct telephone lines to key points: i.e. Yard Managers (who look after train crews), signalmen and regulators (train service running), Depot Foremen (rolling stock), Substation Control rooms (current supply) and selected platforms or operations rooms (passenger flows). In addition, there are facilities for staff to contact the Controller by dialling the appropriate 3-figure number on the L.T. automatic internal telephone system. If it is necessary for a call to be made which is an emergency, then an additional "2" digit can be dialled which will cause a red visual to illuminate as well as the (normal) white.

Via the telephone, the Controller must liaise with the emergency departments of L.T. in order to deal with any trouble arising and keep all informed of the position on the railway. With each telephone call made to the Controller (bearing in mind that the great majority of his work is done this way) he must be able to assess the problem immediately, whether the call be from train staff, station staff or other grades. He then has to decide whether to act upon it or merely record it.

In order that he can do his work efficiently, the following are required of the Traffic Controller:

To have an up-to-date knowledge of the safe running of the railway, bearing in mind that safety of passengers and staff is his prime responsibility. In the event of trouble, knowing the reversing points on the line and their capabilities, traction current sections and the location of Car Examiners to deal with train defects.

To have a sound knowledge of Rules and Regulations and the instructions laid down in the appropriate documents.

To have an understanding of faults in Permanent Way, rolling stock, signalling and electrical equipment and in doing so, assessing the seriousness of the problem.

To appreciate the train service being operated in the timetable: the type and pattern of service, which reversing sidings are used at a particular time of the day, and siding/depot capacities. This of course is tied up with the knowledge of passenger flows at busy periods, location of station platforms, telephones and switch rooms. The loss of a lift or escalator at peak periods may have an effect on passengers leaving the station, and if not dealt with swiftly, may cause passengers to be unable to leave a crowded platform, which could soon worsen if trains continued to arrive and disgorge more passengers.

The Controller thus supervises the train service from an office, remote from station staff and public. Incidents "on site" are investigated by an Area Manager, who is responsible to his respective Divisional Manager. The Area Manager provides the completed written report and thus the Controller and Area Manager will liaise closely during incidents.

THE HEADQUARTERS CONTROLLER

The Traffic Controller is thus "bombarded" with many telephone calls during the course of a shift. In the event of trouble, the Controller also liaises with the Headquarters Controller who is located at 55 Broadway. He is able to deal with emergency services independent from L.T., such as the London Fire Brigade and the London Ambulance service.

The Headquarters Controller gives information on incidents to all departments of the L.T. Executive.

The Headquarters Controller also liaises with the press office of L.T. and local radio, and, since February 1979, information regarding the state of the morning peak-hour train and bus services has been given out on local radio, information about L.T. rail services being provided to the radio room at 55 Broadway by the Headquarters Controller. The bus controller and B.R. controllers responsible for the London area services also advise local radio stations of any failures or delays.

Having an overall picture of all L.T. lines, supplied from each Traffic Controller, the Headquarters Controller also liaises with the various engineering and emergency departments within L.T.: Signals, Permanent Way, Works & Building, Lifts & Escalators and Pumps. Direct telephone lines are also provided to each British Rail Controller in the London area and to the L.T. Bus Controller. In the event of a service interruption, the Headquarters Controller is able to organise a special emergency road service which may include private operators, and arrange for B.R. to accept L.T. tickets on alternative routes. This arrangement also applies conversely of course.

In the same office as the Headquarters Controller is the Information Assistant. One of his tasks is to advise stations of service delays and interruptions. In addition, he has to teleprint details of delays, record taped messages for the L.T. internal telephone system and, in collaboration with each line Controller, maintain an up-to-date list of train cancellations. In the event of trouble, he is able to broadcast details of a failure or delay to most station ticket offices by means of a loudspeaker system.

THE CONTROLLER AND INCIDENTS

Emergency procedures are implemented by the Traffic Controller immediately such information is received. These are put into effect with due regard to the rules and regulations currently in force. When it is necessary for staff to inform the Traffic Controller of an incident, it must be appreciated that the Controller is in an office at the end of a telephone and is unable to see what is going on — except for the Victoria Line, and the Jubilee Line from Baker Street to Charing Cross, where closed circuit T.V. is provided for observation on station platforms. (The closed circuit T.V. cameras installed on the southern part of the Northern Line are only monitored in the Station Operations Room at Stockwell.) It is thus important for staff to give as much information as possible and for the Controller to extract the same from the caller. From this maybe one initial telephone call, the Traffic Controller will have to form a picture in his mind and take such action as may be necessary.

If the incident is likely to affect the train service, then the action taken might be (say, for a stalled train):

1—Stop trains entering the affected section; this is done by advising the signal cabin in the rear of the incident and stations between the signal cabin and the incident. It may be necessary, in the event of a peak service, to go back to more than one cabin, to relieve congestion at the first reversing point. On lines with Interlocking Machine Rooms, the signalman or regulator may be miles away, and it may be that he will have to operate more than one area. For example, the Barking regulator controls from Bromley-by-Bow to Dagenham East, which has controlled signals at Bromley-by-Bow, Plaistow, East Ham, Barking, Upney, and Dagenham East. If a delay occurred, say at Upney on the Eastbound line in the peak, then intervention would not only be required at Barking, but also at East Ham, Plaistow, and possibly Bromley-by-Bow. If the delay were lengthy, then Metropolitan trains to Barking would have to be reversed at Whitechapel. If it were necessary to reverse District trains also at Whitechapel, Metropolitan trains to Barking would possibly be reversed at Aldgate to relieve congestion at Whitechapel. This in turn would cause congestion at Aldgate, with the Metropolitan main service already reversing in both terminal platforms. Thus, some of the Metropolitan main service might have to be reversed short of Aldgate, at Moorgate.

2—Advise senior railway officials of the delay.

3—Alert signalmen/regulators and/or station staff responsible for operating emergency reversing facilities.

4—Advise the Headquarters Controller and keep him updated with any developments of the incident.

5—Alert Car Examiner and, where necessary, Signal department and Permanent Way staff, should the train defect damage signal equipment or track.

6—Answer Drico, Carrier Wave, Storno Radio or Tunnel Telephone calls as and when required.

7—Decide if and when to reverse trains either side of the stalled train, and to ensure that when doing so, destinations and intervals are kept as even as possible, with regard to the circumstances.

8—Liaise closely with Yard and Station Managers responsible for train crews so that they know of deviations from the scheduled service.

9—Modify the action being taken, if the information received during the incident warrants this.

10—Be prepared to make the necessary arrangements for the train following the stalled train to move up and assist.

11—Be prepared to inform train and station staff to detrain passengers in the tunnel, ensuring that all the safety precautions are taken.

12—Arrange for the discharge of traction current and operation of isolating switches in the affected area before detrainment commences, bearing in mind cross passages and parallel lines.

The above list indicates some of the main considerations the Traffic Controller has to think about when such conditions apply. The list is not necessarily complete, neither are they necessarily in priority order. Due to the different circumstances of every type of incident, they can apply partly or wholly.

To assess the seriousness of a defect on a train in service, a Car Examiner has to be called for. Under normal conditions, he meets the train and then advises the Controller so that the required action can be taken (taken out of service, changed over (i.e. substituted by a good train from a depot), or if serviceable, to continue running). In the event of a train being stalled and there being no train service to get the Car Examiner to the location, the Traffic Controller instructs him to get there by the quickest means, usually by taxi.

Car Examiners are located at certain points throughout a line (e.g. the Northern Line examiners are located at Edgware, Finchley Central, Euston, Kennington and Tooting Bec) but some may be shared between two lines — such is the case at Rayners Lane (Metropolitan and Piccadilly) and Acton Town (District and Piccadilly) — and some points may not be manned all the time. These factors the Traffic Controller has to bear in mind when deciding which examiner to call; inadvertently to call a location where the examiner is not on duty is time-wasting and when dealing with an incident, every second counts.

When dealing with signalling or permanent way defects, such considerations like whether it is necessary to impose a temporary speed restriction over the affected section, and whether the service should be reduced or even suspended, come into play. Time taken for the repair of the fault has also to be considered, ensuring that passengers are not delayed for lengthy periods in tunnels.

In the event of a major incident, such as a derailment or collision, the Divisional Manager may appoint an Incident Officer on site, who will take charge and liaise with the Traffic Controller and with all departments on site, regarding the action to be taken.

In tunnel sections, the facility is provided whereby the motorman of a train can communicate with the Traffic Controller. This system, first introduced in the early 1950s, is known as Drico (**Dri**ver-**Co**ntroller communication), but before it can be used, the train must be at a standstill. The driver then attaches two clips on to the tunnel telephone wires and is then able to speak to the Controller. This system of communication is limited, in that it is one-way only: from the driver to the Controller, as its title suggests — the Controller cannot call up the driver unless his train is stationary and the clips are already attached.

On the Victoria Line, a Carrier Wave system is provided which gives two-way communication, but this is between the Train Operator and the Regulator. This system uses

the current rails, and was introduced to the Victoria Line when it opened, after experiments on the Hainault-Woodford branch, where A.T.O. tests took place from 1964.

Since 1972, experiments have been taking place with Storno Radio Communication between the driver and Controller, but being able to be used by both parties, even when the train is in motion and without having to "clip-on" leads. Its use is at present limited to the Bakerloo and Jubilee lines, but plans are in hand to equip the Northern Line next.

TRACTION CURRENT AND THE CONTROLLER

Traction current is one of the Traffic Controller's prime responsibilities. Any member of staff can request current to be switched off, but only the Traffic Controller can authorise its recharge. The majority of L.T. substations are now remote-controlled from a small number of Substation control rooms, from which the operation of a switch or button charges or discharges current sections via the substation, which may be miles away. For example, the Northern Line current is completely controlled by one Substation control room, being located at Leicester Square.

As already stated, any member of staff can request current discharge, by quoting his identity, location and why the current is required off. This is normally done via the Traffic Controller, although it could be done via the Substation control room direct. However, all new staff, when undergoing training, are taught the Traffic Controller's telephone number. Where possible, for safety reasons, the person who requested current discharge should advise the Traffic Controller when it is all clear to recharge, and he then instructs the substation controller to switch it back on. In the event of long delays, with the change of staff shifts, it may not always be possible for the same person to give the all-clear.

At tunnel stations there are facilities for current to be discharged by staff on the headwall tunnel telephone. It is found usually in a black box which is sealed. To discharge current by this means, the seal has to be broken, a button must be pushed and the telephone handset lifted. The pushing of the button and the lifting of the handset will discharge current and the telephone will communicate directly with the Traffic Controller, who would have a visual and audible indication in his office when this was operated. At certain stations near current rail gaps, it may be necessary for current to be discharged from both sections, especially if the train is "bridging" across the gap between the two sections. At these locations, a "section ahead" or "section in rear" plunger (also sealed) is provided.

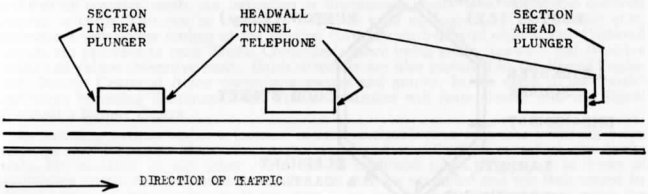


Diagram 1

The tunnel telephone wires between stations will also discharge current if pinched together, and the driver of a train is able to clip on a telephone handset for direct communication with the controller. This system is independent from Drico already mentioned as the telephone handset causes the tunnel telephone wires to be short-circuited, thereby cutting off the current, whereas the Drico clips (clipped on to the same wires) do not. If traction current were to be discharged by this method, but there were no call on the tunnel telephone (vandals, hooligans, etc., on stations, or perhaps a defect in the tunnel telephone wires) the Traffic Controller can authorise recharge after seven minutes, checking first the headwall telephone seals in the affected section.

At the close of traffic each day, traction current is discharged at a published time (or after the last train if running late). Current for signals, lifts, escalators and lighting

normally remains on unless special arrangements are made in advance. In open sections, traction current is discharged at the close of traffic by the Substation controllers, when advised by the appropriate signalman or regulator that their respective sections are clear of trains. (On the Northern and Victoria lines, the regulator advises the Traffic Controller, who in turn advises the Substation controller.) A similar arrangement applies to tunnel sections, except that the discharge of current is done by the Traffic Controller operating the tunnel telephone lines from his office. This is a D.O.T. requirement, and proves that the tunnel telephone line equipment is working; being tested once every 24 hours.

The charging of traction current before the start of traffic is done by the Substation Controller at the time laid down in the relevant instructions. For tube tunnel sections, the same procedure is carried out, but only after a "Line Clear Certificate" has been completed and handed in to the Substation Control room. This ensures that all tube tunnel sections are clear of any staff that might have been working in the tunnels during the night. A Line Clear Certificate is also required if traction current has been switched off before the last trains have run, but after the published time (in the case of late running last trains, for example). A line clear certificate is completed by a Permanent Way Ganger,

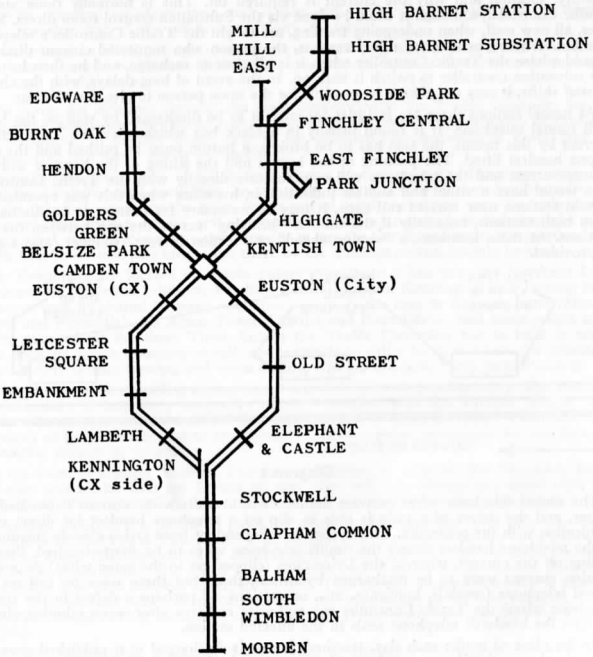


Diagram 2: Northern Line Traction Current Sections

after receiving the "all-clear" on each section by various patrolmen throughout the tube tunnel system.

There are some traction current sections which are partly open and partly in tube tunnel. These are known as "Composite" sections. The Line Clear Certificate, referred to above, refers only to the tube tunnel part in this case. Examples of 'Composite" sections are Arnos Grove-Southgate and Hendon-Burnt Oak.

THE CONTROLLER ON NIGHT DUTY

On the Northern Line, for example, the Traffic Controller has to discharge some 38 traction current sections using the tunnel telephone lines in his office. He also has to authorise the Substation controller to discharge another thirteen "open" sections. (Both lines from Edgware to Burnt Oak stay on all night, to feed Edgware Depot.)

In addition, special attention must be given to last trains and their connections and also to Engineer's trains and engineering works during the night. Each week, a Traffic Circular and Engineer's Trains Appendix is published for the following week which contain details of engineering works, possessions, current alterations and timetable alterations. On most nights, these may be amended by the publication of a special Engineer's notice.

Regarding Engineer's trains and possessions, alterations to the switching of traction current are detailed, as is the operation of section and isolating switches. These are operated by a Cable Lineman on site, after consultation with the Traffic Controller.

During winter months, special arrangements for de-icing must also be considered, with the running of sleet trains throughout the night. These arrangements were explained in Underground News No. 204, page 605.

LOCATING POSITIVE AND NEGATIVE EARTHS

The location of defective equipment or obstructions on the track through the medium of the traction earth detection system is broadly as follows. The traction current system is divided into 35 sections. Positive and negative earth visuals are situated in the vicinity of the Traffic Controllers' desks, on a section basis, for the division. The visuals are repeated in the Headquarters Controller's office for the whole system on a line basis. With the equipment provided, the Controller is able to locate an electrical fault which has caused a positive or negative earth. An indication is illuminated if any fault causes the 600 Volt current to earth. This can be caused by defective train equipment, lift or escalator gear, permanent way or the fouling of the traction current rails by metal objects, etc. Coloured visuals are provided in each Traffic Controller's office being green (normal), red (Positive fault) and yellow (Negative fault). Earth detectors are also provided in the Signal Engineer's Report Centre at Acton comprising meters and graphs. In the event of an "earth" indication becoming illuminated, the Traffic Controller will liaise closely with the Signal Engineer's Report Centre.

By isolating sections within a traction current sectionalisation area (the switching being done by the Substation Controller at the request of the Traffic Controller), the faulty train, lift, escalator or any other cause can be narrowed down. The track or items of equipment within this narrowed-down area can then be examined and the fault traced by the operation of trunk switches. If the fault is on a moving train, its progress along the line can be plotted. The Car Examiner would be alerted and the train withdrawn from service at the first possible opportunity and electrically isolated if necessary.

Taking again the Northern Line, it is seen from diagram 3 that it has 6 sectionalisation sections. On all lines, the current rail gap distance between each sectionalisation section is about 48ft, long enough to prevent sections being "bridged" by a train.

TRAIN SERVICES AND THE CONTROLLER

In order to resume scheduled running after a delay, reformation and renumbering of trains may be unavoidable; but in these days of undermanned depots, this action must be taken in the closest co-operation with the Yard Managers concerned. In the case of limited late running due to an incident, much may be achieved by the regulation of service intervals.

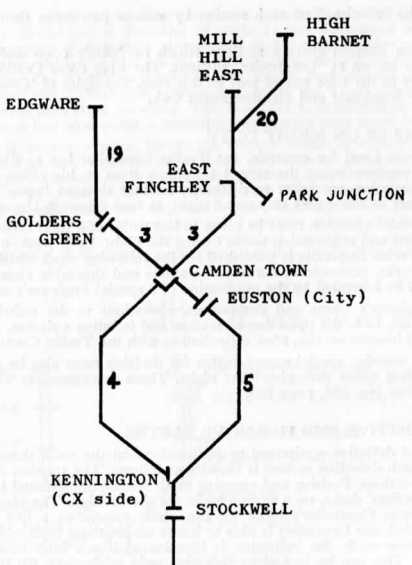


Diagram 3: Northern Line Traction Current Sectionalisation Sections

In the event of an incident being cleared during the morning, the special service, which could have been put in at a moment's notice, would still be maintained, and reformation would not take place until Yard Managers had been consulted and a time agreed when the maximum number of crews were available. No useful purpose would be served by reforming services in the event of a failure extending over a long period, such as a signal failure, until the incident is cleared and the service is moving freely.

In the evening, the special service, dependent again on the crew position, would probably operate throughout until last trains are reformed to schedule. It must be emphasised that train crews are the Yard Manager's prerogative, but the Traffic Controller today can no longer reform his service without the co-operation of the Yard Manager. Indeed, if the crew situation is very bad, often the only method of getting back to timetable is to reverse trains short of their destinations. Whilst not good practice, it can help regain lost time if carefully considered. A "golden rule" in reversing short is not to reverse the first train in a convoy and to describe the short trip as early as possible in order to minimise passenger inconvenience.

For example:

Assume that train 102 has been delayed travelling southbound on the Northern Line at Kennington, with a defect which has now been rectified by the Car Examiner. All trains are scheduled to travel to Morden.

Time due at Tooting	Actual time at Tooting	Destination next trip from Morden	Suggested action
101 1100	1100	Colindale	Regulate for gap behind.
102 1105	1120	Mill Hill	Reform to 104 at Morden.
103 1110	1123	Colindale	Short-trip to Golders Green behind 105 from Kennington.
104 1115	1125	Mill Hill	Reverse at Tooting and reform to 102.
105 1120	Rev at Ken	Colindale	Run a few minutes early to cover gap.
106 1125	1129	Mill Hill)	
107 1130	1132	Colindale)	No action required.
110 1135	1135	Mill Hill)	

The above shows how part of a service could be "put right", assuming that the crew position on the trains reversed and reformed allows this. For example, it would not be possible to reverse 104 at Tooting or 105 at Kennington, if the crews were due to be relieved at Morden. The action taken therefore depends on the situation at the time it happens.

Regulation of service intervals

The object of regulating is to equalise extended train intervals caused by delay and to prevent exceptional overcrowding, thereby minimising the risk of further loss of time, and to reduce waiting time for the passengers during a period of late running or intervals caused by cancellations. With present day services, the regulating of train intervals must be given much thought: junction working, layovers, booked headways, fluctuations of traffic consequent upon weather conditions and special events, must all be taken into consideration before deciding to hold trains for regulation purposes. There are times when trains can be held without detrimental effects on the service, but on the other hand, holding of trains can sometimes make the situation worse. During peak periods, it is open to question whether any benefit is obtained by holding trains that are already overcrowded, and it might be considered that the only way to offset this position is for the Traffic Controller to inform main stations on the route of the intervals, and for the Station Managers to put into operation "Station control" whereby the numbers of passengers entering the stations are restricted until the position has eased.

Reformation of services

Reformation in its present form was introduced on tube lines round about 1926, in the period when these lines started being extended in earnest.

Prior to this period these lines (with the exception of the Bakerloo Line which ran to Watford) were only about 10 to 12 miles in length, self-contained with little or no junction working, and the time taken for a round trip was approximately one hour. When delays occurred, the service was regulated at intermediate signal cabins and an even interval service was maintained. If trains were reversed short of their destinations, they were taken out of service, held over, and then put back into service in proper sequence. In the main the only reformation to take place affected last trains, in order that the service finished to time.

There is of course a tendency to return to this course of action today from sheer necessity, but the lengths of line served have extended from 10 or 12 miles to distances up to 40 miles, taking up to 90 minutes in journey time.

Additional junctions have been constructed in the course of these extensions and, in the case of the Northern Line, trains passing through Camden Town junction have to fit in again at Kennington junction and vice versa. Trains must therefore run strictly to time

through these junctions, otherwise late running will be set up and the reaction will affect the whole of the service. Train crew reliefs now take place not only at booking-on points, but at intermediate stations throughout the line (such as Camden Town on the Northern Line, Wembley Park on the Met/Jubilee, and Earl's Court on the District).

The principle of reforming is to restore the service to scheduled working immediately after delays, or heavy traffic conditions that have set up late running. Apart from total reformation, it is necessary at times, especially during peak periods, to reform a limited number of trains which have set back the service, thus preventing the whole service from being affected.

Reformation is normally performed at a terminal or service reversing point on the line, and the whole operation is directed by the Traffic Controller with his overall knowledge of the situation.

Only in isolated circumstances can hard and fast rules be laid down for reformation of services; these must be left to the discretion of the Traffic Controller on the line concerned. He takes into consideration the traffic conditions prevailing at the time, the maximum lateness the service can run coupled with layover times, before arriving at a decision whether to reform or not.

IN CONCLUSION

It can therefore be seen that the job of a Traffic Controller can be one of ease and quiet one minute, and one of busy urgency the next, on any day or night of the week.

Underground is published by the London Underground Railway Society.

Editor: David Hayward, 85 Francis Road, Hounslow West, Hounslow, Middlesex, TW4 7JT.

Correspondence and material for future issues should be sent to the Editor at the above address.

Acting Editor (for this issue only): Nick Mitchell, 9a Dunrobin Court, 389 Finchley Road, London, NW3 6HE.

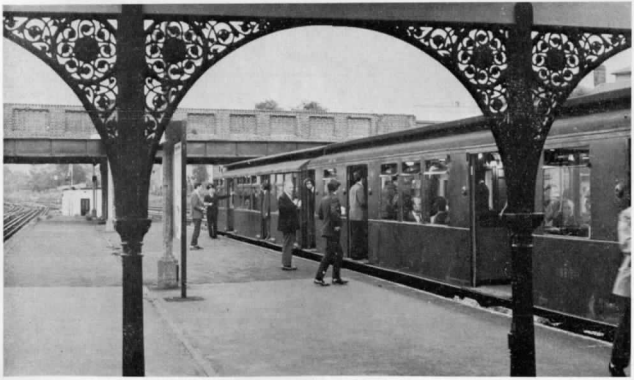
Opinions expressed are those of individual contributors and not necessarily those of the Society or Editor.

Printed by Crown Press (Keighley) Limited, Chapel Lane, Keighley, West Yorkshire.

Above: Q23 car 4268 heading an East London train at Whitechapel on 11.9.71. [R. J. Greenaway

Overleaf: 1962 stock at Leytonstone (1537 nearest camera). [B. R. J. Hardy

Below: 4248 at head of R.C.T.S. Q stock tour at Richmond on 12.9.71. [R. J. Greenaway




LEYTONSTONE
1537
2/74