



The Journal of
The London Underground
Railway Society

Issue No 25
Volume 3 No. 1
January 1964

"METROPOLITAN RAILWAYS: DEVELOPMENT AFTER THE FIRST 100 YEARS"

The need to expand and develop the London Underground after the Victoria Line is built, in order to handle the growing number of commuters coming to the West End and City, was urged by Mr. Anthony Bull, a Member of the London Transport Board, in a paper under the above title to the Metropolitan Section of the Institute of Transport, on Monday 2nd December 1963. Mr. Bull is the Member of the Board responsible for the Underground, and is also Chairman of the Passenger Transport Planning Committee for London, which is composed of representatives of the London Transport and British Railways Boards, and which has the task of planning passenger transport facilities in the London area in the next 20-25 years.

Mr. Bull pointed out that, in 18 cities abroad, metropolitan railways were being expanded or new ones built, while in another 34 cities, schemes for expanded or new underground railways were under active consideration. The requirement for further underground railways in London was at least as necessary as in any other city of the world.

The paper was prepared before the publication of the Buchanan Report, but it was written in the light of the situation which confronted Professor Buchanan and Sir Geoffrey Crowther and his steering group, and in it Mr. Bull comes to similar conclusions, that there must be new and strengthened regional planning agencies for Britain, that great reliance must continue to be placed on public transport in big cities, that there must be co-ordination between development plans for transport and land, and that planning bodies must look further ahead than the 20 years now accepted.

Dealing with the London travel problem, Mr. Bull said that nearly $1\frac{1}{2}$ m. people entered central London every day to work, almost 73% by rail and over 27% by road. Of these, public transport carried over 90% and private transport the rest. As far as rush-hour road traffic was concerned, the number of passengers carried by bus in

2 the peaks had become substantially less in the last ten years, whereas those carried by private transport had almost doubled. "But" said Mr. Bull, "notwithstanding the rapid increase in the means of private transport, major improvements to the road system, and the energetic application of traffic engineering measures, the total number of passengers brought into the central area by road in the morning peak period has decreased." On the other hand, railway systems serving London were carrying both a greater proportion and a greater number of passengers than ten years ago.

Mr. Bull stated that, by improvement to access routes and remedial measures at bottleneck points, (some bottlenecks being created by road improvements elsewhere), by control of loading, unloading and parking in central London, and by prohibition of through traffic in the area, it would be possible to provide for some further increase in the capacity of the road system. The capacity in terms of people moved could be increased still further if the roads could be freed to enable a materially better bus service to be provided - buses being approximately ten times more economical per passenger carried in their use of road space than private cars. "But" he added, "it remains that the bulk of the passenger movement to and from the central area of London and other major cities of the world must be by rail."

Mr. Bull said that planning authorities in the London region envisaged that on the basis of present planning commitments there would be approximately 125,000 additional office jobs in the central area by 1971, with a further possible increase of 45,000 by 1981. At the same time, there would be very large increases in jobs in the London conurbation outside the central area, and many of those additional jobs would be occupied by local residents of those areas, now working in central London. The net result of these changes would be a large increase in commuters entering central London from outside the conurbation, amounting perhaps to 275,000 by 1971 and possibly a further 125,000 by 1981.

The speaker stated that it was assumed that 85% of the 400,000 additional commuters coming into central London from outside the conurbation in 1981 would travel by British Railways suburban and outer area services, and it would therefore be necessary to provide capacity for some 340,000 additional passengers on these services. Recent studies by BR had indicated that by the removal of bottlenecks on existing lines, the provision of extra tracks, the installation or completion of electrification where justified, by the replacement of rolling stock by higher-capacity, longer and new trains, and by the remodelling of timetables (a measure recently announced by Southern Region), capacity could be made available on

the Main Line railways for these additional commuters on the assumption that they travel from areas served by lines where capacity could be made available, and that money for the necessary works and new rolling stock is forthcoming.

Mr. Bull said that the outer suburban rail services must provide a sufficiently fast, convenient and comfortable service to compete effectively with the private car, from principal outer suburban stations to in-town terminals. Average speeds of 50/60 m.p.h. should be aimed at as had already been achieved in the case of the Southern Region electrification schemes and the Eastern Region electric services to and from Southend, Chelmsford, Colchester and Bishop's Stortford. The aim should be to provide seats for all commuters on these outer suburban services.

The railways serving the outer areas should be relieved of traffic within the inner suburban ring, Mr. Bull suggested - the outer suburban trains not stopping within, say, 10 miles of the central areas except where necessary for interchange with the Underground. There should be feeder bus services to stations in outer suburban areas where the volume of traffic merited them. Where traffic density was not sufficient to support bus services, provision of large car parks on a scale not hitherto approached in Great Britain would be required. Cleveland, in the United States, was quoted as an example, where on a rapid transit system of 15m. with 14 stations there were three car parks at the outer ends of the system with a capacity of 2,500, 1,300 and 960 cars respectively, all fully used, and a total capacity at seven of the stations of roundly 6,000 car park spaces.

London Transport, he said, controlled 216 miles of railway with 226 stations. At 53 of these stations in the suburban areas there were 2,900 car park spaces. Additional parking spaces were being constructed wherever this could be done at reasonable cost. "But", he added, "much more comprehensive measures by all parties concerned will be needed to make adequate provision for the car parks at or adjacent to stations in the commuter belt."

Mr. Bull said that onward distribution of commuters from the in-town terminals and local movement within the built-up area of London should be principally by the Underground system. "The layout of the Underground" he said, "should be such that no part of the central and inner suburban area is more than about 7 or 8 minutes from an Underground railway station - an ideal virtually already achieved in Paris. The use of through tickets between the outer suburban and the urban systems should be encouraged, and interchange facilities of maximum convenience provided. Wherever possible

‡ interchange should be across a platform as at Barking or Stratford. Adequate bus services are required in central and suburban areas for local movement."

Mr. Bull said that the Victoria Line would provide additional capacity for 44,000 passengers per hour into the central area from south and north London, without making allowance for the relief of congestion on sections of existing Underground lines. "It is clear" he continued, "that to enable the Underground to relieve the suburban railways of their short-distance traffic and to distribute to in-town destinations say a quarter (say 85,000) of the 340,000 additional commuters entering central London in 1981 by British Railways, it will be necessary, after construction of the Victoria Line, to develop further and extend the London Underground system by selective modernisation and new construction." Mr. Bull outlined possible developments to the system which he said would be among those which would be considered by the Passenger Transport Planning Committee, as follows:-

1. South-west extension of the Victoria Line in the direction of Brixton in order to provide an additional cross-river facility and, by means of an interchange station at Stockwell, to relieve the Morden section of the Northern Line.

2. Extension of the Holborn-Aldwych shuttle service to Waterloo to provide another cross-river facility and to relieve existing Underground lines serving Waterloo.

3. Extension of the Bakerloo Line in the direction of Peckham for which capacity could be made available if the line could be relieved, by the extension of the Victoria Line and the Holborn-Aldwych shuttle, of some of its existing traffic north of Waterloo and if it could be given better terminal facilities than were available at Elephant & Castle.

4. The extension of the Victoria Line from its north-eastern terminal at Walthamstow (Hoe Street) to South Woodford or Woodford to give further relief to the Central Line.

5. Construction of a new tube, on the general lines of route F of the London Plan Working Party (1949) from Baker Street by way of Strand and Fleet Street, to the City and possibly over the East London Line to New Cross. In the north, this line might take over the Stanmore branch of the Bakerloo to enable more capacity to be provided on the existing Bakerloo Line between Baker Street, Paddington, and Queen's Park. In the central area of London, such a line as Route F would relieve the Bakerloo, Central and District Lines, and, by being on a different route, would be an alternative preferable to doubling one or more of the existing lines. If, in the south-east,

5

beyond New Cross, the line were extended to take over one of the Southern Region suburban branches, possibly the Bexleyheath Line, more relief would be given to the south-eastern section of the Southern Region between New Cross, Borough Market Junction and the terminals at Cannon Street and Charing Cross.

Mr. Bull said that the effect of such new Underground railway schemes would be to relieve congestion on existing railways at points where they are overloaded and provide inlet capacity to central London for some 50/60,000 additional commuters per hour above that being provided by the Victoria Line. Such a programme might complete the major urban railway construction required in the London area until and unless there were further major technological changes in methods of transportation and, or major changes in the nature and function of the metropolis.

Mr. Bull added "I would however emphasise that these projects can only be regarded at this stage as schemes requiring consideration, and that, as a result of further study, variations to these projects or other projects may emerge as being preferable." He also warned that a relatively new development which made it important to formulate and get accepted a plan for any further Underground railway construction in London was that, unless land and subsoil were reserved the construction of high buildings with deep foundations, and major road works, particularly flyovers and flyunders at or near focal traffic points, might make it financially impracticable or physically impossible to construct railways on the required route.

Looking to the future, Mr. Bull said that the new Underground railways of London would incorporate improvements adding to efficiency and providing economy of operation. These would include automatic train operation, facilities enabling the traffic controller of a line to be continuously aware of the position of each train and to be in two-way radio communication with drivers, mechanised issue and control of tickets, television station control and long-welded rails to relieve noise and add to comfort.

Mr. Bull's paper also dealt with the cost of travel in the future and how the financial burden of new tube construction might be met. Efficiency in the use of the expanded public transport system would be increased by extension of office accommodation outside the inner area and by staggering of working hours. Progress, by substantially increasing the use of public transport against the peak flow or outside the height of the peak, would keep down the cost of travel. Any improvement which could be obtained in load factor combined with the technical developments described should result in the cheapening of the relative cost of travel in relation to current price levels.

6 It had already been shown that on a basis of study of costs and social benefits, new urban railway construction could be remunerative to the community.

"A new urban motorway" said Mr. Bull, "with say two lanes in each direction on which 6,000 passengers an hour can be moved in one direction in private cars ($1\frac{1}{2}$ persons per car) can now cost something of the order of £5m. per mile. A new underground railway also costing £5m. per mile is capable of moving 25-30,000 passengers an hour in each direction - giving an advantage to the railway of approximately five times the capacity of the motorway at about the same cost. An underground railway can also be constructed without any permanent occupation of the surface area except for entrances to the stations and relatively small buildings for electrical substation plant and ventilation." Studies of social benefit in relation to cost, similar to that made by C.D.Foster and M.E.Beesley on the construction of the Victoria Line, he said, were likely to play a valuable part in the assessment of the merits of the proposals for constructing major new facilities, both rail and road, in urban areas. On the basis of facts already known and experience overseas, particularly in North America, it seemed certain that money for the expansion of the metropolitan railway system would be forthcoming.

"It may be right" said Mr. Bull, "that in addition to receipts from fares, an appropriate contribution should be made towards the provision and, or upkeep of the urban and suburban railway systems by taxpayers or ratepayers or both in the region in acknowledgement of two major benefits to the community which are not reflected in fares. The first benefit is the relief which the provision of the railway facility gives to road traffic by allowing the latter to move with more freedom and at less expense. The second is the standby facility for the occasional user of the railway when his car is under repair or for some other reason he does not wish to use his normal means of transport. There is apt precedent for charging specially for this benefit in the manner in which electricity and gas authorities make a standing charge for the availability of the supply, irrespective of the extent to which the supply is actually used.

"It is for these reasons that the cost of construction and sometimes part of the operating costs of underground and suburban railways have been met from national and, or local public funds in many of the world's great cities. In many cases, assistance has been given to the operating undertakings by relieving them of taxation. In the case of transport systems serving some communities in the USA, the transport undertakings have been given powers to obtain assistance directly from the community through local taxation."

Mr. Bull concluded by saying that, while his paper dealt with 7 London primarily, the same situations were arising and the same solutions were being sought in almost all large metropolitan cities outside Great Britain. He said that in 52 cities abroad the expansion of existing, or the building of new, metropolitan railways was either under construction or under active consideration.

THE F STOCK STORY

Revolutionary when they came into service in 1920, cars of LT's F stock ran their last journey in passenger service on the night of 7th/8th September 1963, on the East London Line - the only line on which the stock was still operating. Easily recognisable by the oval windows at the ends of the cars and the steel interior partitions, the stock, with its extra width and three double sliding doors on each side was unsurpassed in its day for carrying large numbers of passengers and clearing football and other crowds quickly - in fact, some devotees think that it has never been surpassed. Be that as it may, F stock has gone, and the last train to be worked by it was the 12.28 a.m., Sunday 8th September, from Whitechapel to New Cross.

When the Metropolitan District Railway Company needed new stock after the 1914-18 war, it broke with tradition and ordered a new type of train in 1919 from the Metropolitan Carriage Wagon and Finance Company. The new trains went into service between the 23rd December 1920 and the 15th August 1921, being officially referred to as 1920 or F stock, but soon nicknamed "Tank" stock by staff - a name which stuck until the end. A hundred cars were ordered; there were 40 motor cars and 60 trailer cars (12 of which were equipped as control trailers). In some of the trailer cars, first-class accommodation was provided; in 1939, 12 of the third-class trailers were converted to first/third composite trailers, but in 1940, following withdrawal of all first-class travel facilities from the District Line, all the composites became third only. These 100 cars were the first to be received by the District after the first World War, and before their arrival, the District's electric stock consisted of cars of the following five classes:-

A 1903 stock by Brush; B 1905 stock by various builders including Brush and Metropolitan Amalgamated; C 1910 stock by Hurst Nelson; D 1911 stock by Metropolitan Carriage; and E 1913 stock built by Gloucester. A and B stocks had bodies of fireproofed wood, but C, D and E stocks were steel-bodied. The new F stock differed greatly in appearance from its predecessors; the width was about 11" more, clerestory roofs were superseded by elliptical roofs with large oval

8 ventilators, and the straight sides of the earlier stock gave way to a profile which took greater advantage of the permissible loading gauge. Speed of loading was improved by the provision of three double sliding doors on each side of the cars - some earlier stock had been fitted with air-operated doors, but the equipment was not a success, so the F stock cars were delivered with hand-worked doors, and remained so until conversion to air-operation just prior to the 1939-45 war. The motor cars seated 40 passengers, there were 48 seats in the trailer cars, and 44 seats in the control trailers. Standing passengers held on to vertical poles at first, but when these proved to cause obstruction, hand straps looped on horizontal rods were installed below the ceiling, as substitutes.

Each 8-car F stock train included three motor cars; with four GE-260 motors of 200 h.p. per motor car, this gave a total per train of 2400 h.p. This power was too great, and resulted in unnecessary current consumption. Accordingly, fifteen motor cars had two of their motors removed to lessen total train consumption; twelve of these surplus motors, after a spell in some of the old District Railway electric locomotives, returned to F stock when the twelve control trailers were converted to motor cars between 1938 and 1940. Between 1928 and 1930, the original Westinghouse air brake system was replaced by electro-pneumatic braking, this being the pioneer installation of such equipment.

During the 1939-45 war, one of the motor cars which had been converted from a control trailer was damaged beyond repair by enemy action, so the end of the war found 99 of the original 100 cars still running on the District Line. Soon came a re-shuffling of LT's surface stock. The Metropolitan wooden cars (with hand-operated doors) on the Circle Line, and the District C, D and E stock cars were due for scrapping. The Circle Line (formerly the Inner Circle) received P stock from the Uxbridge service of the Metropolitan Line. All 99 surviving F stock cars were transferred from the District Line to the Metropolitan Line, and deliveries of new R stock cars to the District replaced the scrapped C, D, and E classes, and the transferred F stock.

Before entering service on the Metropolitan Line, the F stock cars were extensively reconditioned at Acton to fit them for an estimated further life of ten years. Repairs included the renewal of all power cabling and nearly all the control wiring, the replacement of the original steel-sheeted wooden doors by new doors cast in "Alpax" aluminium alloy, body pillar repairs, and the fitting of new side panels where the old ones were found to be corroded at floor level. Improvements included the fitting of additional lighting, modified seating, a more attractive painting scheme

internally, and improved bogie springing.

9

F stock trains of 8 cars began to come into service on the Metropolitan Line from September 1950, and were mostly used on the Uxbridge service, although occasionally an F stock train worked to Watford, or (after electrification in 1960) to Amersham. As there were more F stock cars available than were needed by the Metropolitan Line suburban services, some could be spared to replace the ex-District Railway 1910/13 stock (with hand-worked doors) which was providing the shuttle service on the East London Line. As this line required only four-car trains, modifications were made to a small group of cars to enable them to operate this shuttle service, which they did from December 1953 onwards.

With the deliveries of A stock trains to the Metropolitan Line, withdrawal of F stock began, the first car withdrawn (apart from the wartime scrapping of no.4636) being no.4631. The last F stock train on the Uxbridge service ran on 15th March 1963, and on the 7th/8th September, the four-car units on the East London Line operated in service for the last time, and were replaced on Sunday 8th by Q stock cars from the District Line.

In passing, it is interesting to note that, in future, all the servicing for the East London Line will be done at Ealing Common depot, District Line, instead of at Neasden, Metropolitan Line, and that the District will be providing all the stock for a service which is still Metropolitan operationally.

During the Underground Centenary Parade and Exhibition held at Neasden in May 1963, F stock was represented by four cars - motor cars nos.4603 and 4606, and trailer cars nos.8513 and 8530. This was not the first time F stock had been on show, as at an Exhibition at South Kensington station, to commemorate the Diamond Jubilee of the Metropolitan District Railway, motor car no.636 (eventually to be renumbered 4613) was displayed from 5th to 11th November 1928.

FILM REVIEW

A HUNDRED YEARS UNDERGROUND Directed and Narrated by John Rowdon; Produced by Edgar Anstey and John Shearman; for British Transport Films; running time 40 minutes; released December 1963.

Most readers will already have seen this film, as its first appearance was a televised one - on BBC TV during the evening of 6th December 1963. It is a good, general-interest, film, intended to interest the Londoner in the history of his Underground. Old photographs, films and drawings, are interspersed with information from eminent engineers, reminiscences by famous Londoners, and shots of the building of the Victoria Line. If not seen on television, should be seen at the first opportunity - some shots will show up better on the cinema screen.

THE PRESERVATION OF L44

R.A.Castle

Honorary Secretary, London Railway Preservation Society.

The purchase of the London Transport O-4-4T steam locomotive, No. L44, by the London Railway Preservation Society is one of the most recent of many successful efforts being made by preservation organisations. It is also another step towards ensuring that the steam locomotive can still be seen in action long after the last example has passed out of commercial use.

Locomotive L44 will be of particular interest to those who study the history of the London Underground Railway system. London Transport have kindly given as much historical detail as is now known of L44 which was originally known as Metropolitan No.1, having been nominally rebuilt in 1898 from parts of that locomotive. It was one of seven originally built for the Aylesbury line passenger trains, and also hauled the first passenger train from Harrow to Uxbridge in July 1904. - and was decorated for the event.

Since 1937 L44 has been largely used on ballast trains and shunting, and was displayed at the Centenary Exhibition at Neasden in May 1963.

The project to preserve a Metropolitan steam locomotive is noteworthy in being originated by two L.T. railwaymen; Mr G.P. Fitzgerald and Mr J.C.Stringer, who quickly saw the advantage of working with an established society. The O-6-2T No L52 was first chosen, but whilst funds were being raised it was ascertained that No.L44, which is in far better condition was to be withdrawn.

Some alarm was caused in August 1963, when notice was given that the full price of £450 had to be paid within one month to save L44 from being scrapped. However, so good was the response to the Society's urgent appeal that the money was raised in time. It has since proved to be a lengthy task to arrange for delivery to the L.R.P.S. depot at Bishops Stortford, but it is good to note that L44 has been passed as fit to travel over the main lines under steam.

It must be emphasised that L44 has only been saved by generous loans from a few members, and to ensure its long-term preservation, these loans must be repaid. If all steam enthusiasts would contribute something, however small, then there should soon be no fear for the future. All cheques or postal orders should be payable to the "Met Tank Appeal", and full details of the L.R.P.S. can be had from the above-named Honorary Secretary, at 8 High Stile, Dummow, Essex - to which address donations should also be sent.

Answers by Alan A. Jackson & D.F. Croome

Authors of "Rails through the Clay"

Q7 At Holborn Kingsway, what would apparently have been designed as the southbound line to Aldwych connects with the northbound line to Kings Cross. What is the explanation?

A To have a through station at Holborn for the Aldwych branch would have been somewhat of a luxury, as to make the two northbounds connect it would have been necessary to displace the northbound main line further to the west under private property. (This can be seen by studying the plan in "The Railway Magazine", December 1958, p.820). It would also have meant a very sharp curve on the northbound main line coming in from Great Queen Street.

Q8 What would be the effect of reversing the polarities of the two conductor rails?

A If done throughout, there would be no practical difficulties.

Q9 On what date was the Great Northern & City renamed the "Northern City Line" and on what date did it become incorporated with the Northern Line?

A The name "Northern City Line" was first used in September 1934. On 28th August 1937, the "Morden-Edgware" and "Northern City" lines became collectively known as the "Northern" line in anticipation of the linking of the whole complex by the 1935-40 New Works Programme.

Q10 All Underground working timetables use fractional half-minute timings, but sometimes a three-and-one-third-minute service is advertised for the Central Line. Are these intervals corrected to the nearest half-minute for actual working, or do the staff and programme machines have to work precisely to these actual timings?

A We are not quite clear what is meant by "advertised". We are certain that all train working is geared to half-minutes and minutes; a shorter fraction would hardly be practicable.

NEWS FLASHES

NF 228 In March 1963, the London Transport Board announced that they were investigating methods whereby ticket issue and collection on their railways could be handled electronically. No further information has been released to date, but it may be assumed that the report of the data processing experts who investigated on behalf of the Board will require considerable study before anything further is made public.

NF 229 Not all Q23 stock is being withdrawn from the District Line after all. Some of this stock is in very good condition, and it has been found that it will be cheaper to retain it in service than to convert some of the Q27 "D" end motor cars to "A" end cars - this

12 would be necessary if all Q23's were taken out of service as at present all Q27 motors are "D-ended" whereas the Q23's are mixed.

NF 230 As a result of the delayed departure of the last of the T stock from Neasden, (already reported in the October issue of the Journal), a second train of condemned stock - tube cars ex-Ruislip Depot - was an hour late in commencing its journey to Chesterfield and the breaker's yard. This comprised the following trailer cars, marshalled between match trucks and brake vans, and hauled by WR "2800" class 2-8-0 no.3848:- 7021, 7054, 7120, 7122, 7253, 7260 and 7453. This train actually left at about 1.15 p.m., 3rd September 1963. It is of interest to note that car 7453 was another participant in the Centenary Celebrations in May of last year - see July 1963 Journal.

NF 231 Another tube 3-car set fitted with the modified armrests is 10252-012325-12132. See article in the November 1963 Issue, p.130.

NF 232 Seven F stock cars left Neasden suitably matched on the night of Tuesday, 24th September 1963, en route for the breaker's in South Wales, but were held at West Ruislip for two days before proceeding further on the 26th.

NF 233 The Standing Conference on London Regional Planning has expressed the view, in a recent report, that the number of London commuters may have doubled by 1971.

NF 234 Just prior to the changeover from F stock on the East London Line, a special Crew-Training Train was sent to New Cross depot, made up of the following cars of various series of stock - 4233, 08019, 013152, and 4168.

NF 235 With reference to NF 12, three or more Central Line control trailers (unidentified) have been reported as seen at Bramley, on the War Department lines there.

NF 236 Another movement of condemned F stock, not reported before due to lack of space, took place on 22-3-1963, when the following cars left Neasden for South Wales; 4595-8522-4637-4620-8008-8512-8520-4624.

NF 237 Due to closure of a footpath, residents of the Dury Falls area of Upminster, although within a few hundred yards of both Upminster and Upminster Bridge stations, now have to walk almost two miles to reach either of them - and are likely to have to do so for several months; a new footpath, on British Railways property, is to be opened in the spring - but in the meantime, hiking is not popular in Dury Falls.

NF 238 On 25-10-1963, a passenger pulled the emergency handle in a Northern Line train, because his pockets had been picked. The train was delayed 12 minutes between Camden Town and Mornington Crescent, and was met by Police at Euston; 3 trains were cancelled and 2 cut back.

A new LT railway training centre was opened on the site of the old locomotive and car sheds at White City, on Tuesday, 20th October 1963. This centre replaces the old one over Lambeth North station, which had been open since 1920 and long **been inadequate**.

The White City centre is built round three sides of a rectangular plot providing about 32,000 sq.ft of floor area. One of the two single-storey wings consists of an assembly hall which can be isolated from the rest of the building for lectures or social events in the evenings, the other wing contains the main lecture rooms, and the double-storey block which connects the wings and forms the front of the building has administrative offices on the ground floor, with demonstration, lecture, and work-study rooms above. The building has large areas of glass in its walls, to make the best possible use of natural light. The fourth side of the rectangle comprises a separate building housing the thermostatically-controlled heating plant.

A large amount of apparatus is available for instruction, and facilities are provided for reproducing almost any situation the trainee is likely to encounter when he has taken up normal railway duties. One room contains an imitation tube tunnel complete with tracks, station platform, and various ancillary equipment found in a real station. The tunnel is blacked out at one end and "tunnel incidents" can be staged in a way which impresses the rules and regulations applying to such situations on the trainee as nothing else could. The equipment includes a microphone and platform loud-speaker to give practice in making announcements to passengers. A 600V.d.c. traction current supply is available for demonstrations, and a device installed to show the effects of traction current arcing.

Other rooms contain electro-pneumatic and Westinghouse brake mechanisms, electrical control apparatus and a working automatic coupling mechanism; there is a cut-away section of a tube car, which carries much of the equipment found in a service car, including air-operated doors and a guard's panel and telephone equipment as used in the tunnels for communication between train crews and the controller. Other rooms again have lift and escalator gear and a booking office complete with ticket issuing and change-giving machines.

A model railway was used at Lambeth North for training, but a much larger layout has been provided at White City, so that a wider range of incidents can be simulated. The railway has 175 ft. of track, ten miniature "silver" Underground cars, and full signalling equipment including illuminated box diagrams; the speed of the

14 trains can be varied at will to suit the instruction being given. The trains were built by apprentices from the Chief Mechanical Engineer's Department, and the track, signals and power frames were installed and wired by Signal Engineering apprentices.

Some lecture rooms have sheet metal blackboards which will take chalk like a normal board, but also form a base to which models of trains or equipment, or parts of apparatus, can cling by means of magnets built into them. This allows the models to be moved about for demonstration purposes, and to be used either independently or in conjunction with chalked information on the board. Some of the upper floor rooms will be used by LT's Staff and Welfare Department for non-railway training such as supervisors' and work study courses - and for "induction" talks for new entrants. There is a projection room on this floor to enable training films to be shown, and there are folding partitions between some rooms so that they can be varied in size to suit particular requirements. The assembly hall, which can seat 220, has a stage and film projection apparatus. It can be used as a lecture hall during the day, or, with the associated cloakrooms and tea bar, as an independent unit in the evenings.

A centre for railway recruitment and training was opened in 1920 at Lambeth North. As the work increased, the accommodation became cramped and in 1948 the recruiting section was transferred and the training school took over the whole of the premises. This enabled more equipment to be installed and the scope of the training to be increased, but the introduction of new rolling stock and equipment in recent years, and a higher rate of staff turnover compared with pre-war days made better premises essential.

The decision to build a new training centre was made in September 1961 and work on site began on 5th February 1962. During 1962 more than 3,550 staff took training courses at Lambeth North, and more than 1,300 enrolled for voluntary classes. The courses are mainly for new entrants or for staff seeking promotion to a higher grade. New entrants' courses cover the duties of operating apprentice, stationman or stationwoman, booking clerk, guard and station foreman. Entrants into these grades receive background and theoretical training at the school, with practical work on stations or trains. Promotional training is provided for suitable staff to qualify for better positions. Courses vary in length from 4 to 36 days, and there are examinations at the end of each course.

The centre has a Chief Instructor, two Assistant Chief Instructors and eight Railway Instructors, and was already in use when it was officially opened, Lambeth North premises having been closed.

At 5.30 p.m. on Friday 13th December 1963, the crowded rear car of the 5.29 p.m. Liverpool Street-Gidea Park BR suburban train was derailed just after leaving Liverpool Street, and shortly afterwards was struck by the 5.04 p.m. Gidea Park-Liverpool Street, which was travelling slowly into the terminus but could not stop in time to avoid the derailed vehicle which overturned. One passenger, a woman, was killed, and 34 others injured, of whom 3 were detained in hospital.

The accident happened at the site of the old Bishopsgate Low Level station, and the one remaining platform of the old station (which still has street access) was used to take the casualties to ambulances, and to disperse the uninjured passengers from the train.

Bishopsgate Low Level had an Underground service when trains on the East London ran through to Liverpool Street, but the station was closed on the 22nd May 1916, and this is probably the first occasion since then that it has been used in any way for passengers.

BOOK REVIEW

A.S.Travis, H.Egan & R.Graham; THE EARLY HISTORY OF THE METROPOLITAN DISTRICT AND METROPOLITAN RAILWAYS IN WEMBLEY; London, 1963; Wembley Transport Society; 48 pp. qto.duplicated, with 2 pp.plates and inset drawing; price 6/6d post free; the Society can supply - see notices.

The scope of this short work is clearly shown by its title, and it is of a type of which there should be more - detailed histories of small sections of London railway history. The authors of this one have a particularly interesting district for their subject, for Wembley saw the partial building, and subsequent demolition, of the Wembley Tower, which was very much a railway enterprise, followed in due course by the Stadium - which presents transport problems of its own. Very full coverage is given to the Tower project, and the branch from the Metropolitan which served it as a contractor's line. The electrification experiments of the Metropolitan are also dealt with in detail, as well as the story of the coming of the Met and Met District to the borough - not forgetting the Great Central.

There are numerous line drawings and sketch maps in the text, which is extremely well produced for a duplicated book. Strongly recommended to all Underground enthusiasts.

Corrections

In the article "Final Farewell to T Stock" which appeared on p.120 of the October 1963 Issue; line 4, the first trailer should of course read 9724; note 1, rear brake should read 954455, and the marshalling order given was of the train from Neasden to West Ruislip.

Subscriptions for 1964 are now due, 15/- for Members and 7/6d for Associate Members, and should be sent to R.E.Labrum, 134 Cranley Drive, Ilford, Essex. Members are advised that no magazines will be despatched after February Issue if subscriptions remain unpaid. Accounts for 1963 must be prepared at once, and all Members and Officers holding money on behalf of the Society are asked to pay this in to the Treasurer, K.R.Benest, 66 Hare Lane, Claygate, Surrey, by the 7th January. Likewise, any Officer who has incurred any expenses on behalf of the Society is asked to claim these from the Treasurer by the same date.

Annual General Meeting for 1964 will be held on Saturday, 21st March, and Members are asked to forward Nominations for the 3 vacancies on the Committee, to the Secretary, 4 Southcombe Street, London, W.14, so that they reach him by the 7th February - having first ascertained that the person nominated is willing to serve if elected. The retiring members of the Committee are - P.R.Davis, who is willing to stand again, R.E.Labrum and S.Sparke, neither of whom is seeking re-election. All proposed Amendments to the Rules, and Motions for discussion at the Meeting should be forwarded to the Secretary to reach him by the above date. Members will only be admitted to the AGM if their subscriptions have been paid for 1964.

Resignation Stuart Sparke has resigned from Office as Deputy Asst. Secretary - Modelling, as he is now living in the United States.

Book Orders should be sent, accompanied by the appropriate remittance, to R.E.Labrum - address under "Subscriptions" above.

Appointments P.R.Davis has been appointed an Adviser to the Transport Collection of the County Borough of East Ham Public Libraries. R.J.Whittome has been elected Treasurer, and A.Wood a Committee Member, of the recently-formed Harrow Public Transport Users' Assn.

Articles by Members P.W.Bradley has a further article on his Metropolitan "Wendeville Road" layout in the December 1963 "Model Railway News"; E.J.S.Gadsden has an article on the Wotton Tramway in the December "Railway World".

THE TIMETABLE

Tuesday 31st December 1963 for 2 weeks, daily except Sunday at Rayners Lane Public Library - Underground Exhibition.

Friday 10th January 7 p.m. Talk by Alan A.Jackson - "From Charing Cross to Edgware" - in the Meeting Room, Kensington Central Library, Campden Hill Road; near Kensington High Street station.

Wednesday 12th February 7 p.m. Visit to Mansion House Signal Box; names to the Secretary at 4 Southcombe Street, London, W.14 now, accompanied by a stamped addressed envelope.

Friday 14th February 7 p.m. Library Meeting, when the Society Library will be made available to members at Kensington Central Library.

Published by TLURS, 62 Billet Lane, Hornchurch, Essex. Copyright.