UNDERGROUND

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THE LONDON UNDERGROUND RAILWAY SOCIETY

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THE SOCIETY IN THE YEAR 1971

The coming year will mark the tenth anniversary of the Society, and it is hoped that this Journal will soon be able to announce some event to mark the occasion in a suitable manner. It is also hoped that the Society will be able to extend the facilities that it is presently offering members; one object is to make UndergrounD an improved magazine, with an increased number of illustrations in its pages and an improved news service. It has been interesting to note over the past few months the manner in which the Society is becoming increasingly acknowledged as an important organisation in its own sphere, and is being referred to more and more by other bodies on matters affecting London's underground railways. For the first time in its history, the programme for the monthly meetings is almost filled for the whole of the year ahead, and it has been most noticeable during the last year that interesting speakers are offering to present papers to TLURS without any approach being made by the Society.

It is unfortunate that this increase in prestige and influence is coming at a time of continually rising costs which threaten to completely disrupt finances - which, because the Society has always tried to give reasonable value for money, have never been a strong point with TLURS.

After a serious review of the present financial state of the Society coupled with a reasoned estimate of 1971 expenditure, the Committee has been faced with the alternative of increasing subscriptions or much reducing facilities. After a long and searching discussion in a recent meeting, it was decided that to increase the subscription was the preferable course - it was recalled that on a previous occasion when members views were canvassed

in a similar situation, there was an almost unanimous preference for an increase in the subscription. However, as stated above it is hoped to provide a better Society for the money paid, and members of the Committee are very conscious of the needs of everyone these days to spend money wisely, and will use every endeavour to see that members who rejoin will feel that they were justified in doing so; also, it is thought that, unless inflation gallops on at an even faster rate than at present, there will be no further increase for some years, although there can be no guarantee of course.

It is hoped that the Committee's decision, taken as it was with a great deal of reluctance, will be accepted as the right one and that our members will accept the necessity for the increased subscription rates, which are for Members £2 and for Associate Members £1.10.0, or in the new currency £2 and £1.50 respectively, with special advice service 5/- (25p).

THE NEW LONDON TRANSPORT C69 STOCK

After a short Press Demonstration run from Moorgate earlier in the day, the new C69 stock entered service on the Hammersmith & City Line services on the afternoon of Monday, 28th September 1970. Only one train entered service that day, but it is expected that further trains will be entering service regularly from now on; a detailed description of the stock follows.

The new stock, for which orders were placed with Metropolitan-Cammell Limited of Birmingham in May 1968, continues the general appearance and finish familiar from the A stock which has been working the Metropolitan main line services to Amersham, Watford and Uxbridge for some years, but has important features to fit it for the purely urban nature of the duties it will carry out.

The order was for 106 motor and 106 trailer cars to make up 35 six-car trains with a spare 2-car unit. A six-car train is 93 metres long (309ft 8½in) and is the maximum length that can be accommodated at some Circle and Hammersmith and City Line station platforms - bearing in mind that this stock is constructed to be capable of one-man operation, when it is essential that the driver's cab should not be beyond the platform end. The C69 stock

trains, as they are called after C for Circle, are the first London Transport trains to be built to metric dimensions, and these will be used in this description.

The most obvious difference between the C69 stock and any other on the London Underground is that four sets of air-operated double doors have been provided on each side. This is because Circle Line passengers tend to travel short distances and there is, therefore, a great deal of passenger movement in and out of the trains: the extra doors should speed this flow and reduce station stop times in peak hours. The additional doors necessitate an extra vestibule with consequent increase in standing space but a reduction in seating. There are 32 seats, arranged in transverse facing pairs on each side of the gangway except at the ends of the cars, where longitudinal seats for two are provided on each side.

Externally, the unpainted aluminium alloy finish is a continuation of modern Underground practice. The cars are formed into 2-car units, consisting of one driving motor and one trailer car, which are fully reversible. A driving cab is provided at one end only of the motor car and so units can be coupled up to form 4, 6 or 8-car trains. A difference which will show up in riding qualities is the Air-Metacone secondary suspension system - this is believed to be its first use in production trains - and this has been linked to automatic graduation of acceleration and braking according to load.

Provision has been made for automatic train operation (ATO) but the equipment is not fitted at this stage. Fourteen of the trailer cars are fitted with de-icing equipment.

General particulars are as follows:-

	Driving Motor Cars	Trailers
	Millimetres	Mm
Length over end panels	16,030 (52ft 7in)	14,940 (49ft)
Width over lower panels	2,920 (9ft 7in)	2,920
Height from rail over carlines	3,685 (12ft 1in)	3,685
Height - rail to solebar top	1,125 (3ft 8¼in)	1,125
Distance between bogie centres	10,820 (35ft 6in)	9,600 (31ft
Bogie wheelbase	2,288 (7ft 6in)	2,288 6in)
Wheel diameter	915 (3ft)	915

Weights are - Driving Motor cars 31t 14cwt; Trailers 20t 5cwt.

Bogies - Traction Control and Braking

The symmetrical bogies have frames of welded and rivetted steel construction with aluminium alloy headstocks, the attachment of transom and headstocks to the soleplates being by knees and rivets. They have taper roller axleboxes throughout and axlebox suspension is of the rubber-bonded chevron type housed in light alloy yokes.

The secondary suspension between the body and bogie incorporates Air-Metacone rubber/air springing units. This is the first time that air suspension has been used in London Transport railway vehicles. As the car fills with passengers and the weight increases air is introduced into the Metacone units on each side of the bogie to maintain the car height. Measuring the need to add more air is equivalent to weighing the car and use has been made of the variable air pressure to control the rate coil setting of the notching relay on the traction equipment to ensure constant initial acceleration regardless of load. Similarly, a variable load valve controlled by the suspension of air pressure adjusts the braking rate. Because the adjustment is on the individual cars there is no fear of accelerating or braking at a rate which will cause wheel difficulties on the least loaded car.

The Metacone suspension is automatically reset every time the doors open and close.

The motor bodies each have two circular-framed LT 117-type traction motors. The motors are connected in permanent series, each taking 300V. They are mounted on roller suspension sleeves in a similar manner to those of the A stock but operate at a higher speed, running at 3,800 rpm when the train is travelling at 60 mph. Such speeds will not be possible on the Circle or Hammersmith and City Lines, partly because the distances between stations are too short and partly because it is essential to restrict the new stock to the performance of the old.

Traction motor control is by conventional automatic resistance switching and incorporates rheostatic braking similar to that employed on the Victoria Line rolling stock.

A new feature is field injection on the motors to obtain a faster build up of rheostatic braking.

The braking system provides for three alternative rates of retardation for normal operation and is arranged always to give preference to the rheostatic brake, air braking then being added on the trailer cars, if necessary, until the required degree of braking has been attained, as indicated by the mercury retarder contacts.

Air braking is by single non-metallic blocks held in cast steel brake heads and fitted at the inner wheel position only. Every wheel has its own related brake cylinder unit. The trains also incorporate the usual automatic Westinghouse air brakes for emergency use.

Carbodies

The underframe of both motor and trailer cars are in light alloy except for the headstocks and bolsters which are welded up from Corten steel. Connections between the steel headstocks and bolsters and the light alloy members of the rest of the car frame are protected against corrosion. The extruded light alloy solebars are continuous from headstock to headstock and incorporate cable ducting. Extruded sections are also used wherever possible for crossbars and longitudes.

The body pillars are produced from aluminium alloy extrusion BS 1476 HE 30 WP and are continuous between solebar and cantrail. The cantrails are of composite form with continuous upper members running from end to end of the car. They are of the same material as the body pillars. Load tests have been applied to the framing to confirm the upward camber that has been given to the cars to ensure that when the car is loaded to its maximum, with the load equally distributed, there will still be an upward camber between bolsters and no droop from the bolster to the ends of the car.

The roof of each car has been built as a unit incorporating top cantrails, purlins and carlines, clad with aluminium alloy sheeting. The aluminium side and end panels have a clean flush finish with panelling rivetted to the body framing.

The driving end canopy is produced as a reinforced glass fibre moulding which incorporates provision for a destination indicator and ventilation duct. The cabs have a power operated sliding door on each side - the first time such doors have been fitted to London Transport driving cabs - and these are draught-proofed by blow-up air seals, the seals being fed by an air valve operated by the movement of the door engine arm.

The passenger doors on all cars are top-hung with an open sill plate to lessen the possibility of obstructions interfering with the operation of the doors. Door indicator lights are fitted to each car - as in all recent Underground stock - to show if a door fails to close. The door controls are fitted in the driver's cab in these trains to simplify one-man operation but they can be operated by a guard from any driving cab on the train. A new feature is a special button which will close three of the four pairs of doors along the side of the car, leaving one pair open for passengers to enter. This is expected to be particularly useful when a train is standing at a terminal station in inclement weather.

Auxiliary Power Supply

A motor-alternator-rectifier unit carried on each motor car produces alternating current at 230V 850Hz. This output is then passed through a transformer to convert the 230V to 115V, supplying the 4ft and 2ft main fluorescent lighting tubes. A rectifier unit converts the a.c. supply to d.c. at 50V to give control current and to charge the auxiliary battery. The 50V supply is then reconverted to a.c. at 230V 50Hz to supply the blower/heaters and to 115 a.c. at 6500 Hz to feed the two fluorescent tubes in each car used for emergency lighting.

Heating and Ventilation

The cars have passenger-operated ventilators above the windows, designed so that they will not let water in, no matter whether they are open or closed. This feature is similar to that incorporated in the Victoria Line stock and obviates staff having to go along the train to shut the ventilators before cars can be taken through the washing plant. The ventilators do not pull down but are operated by a short lever above and to one side of the windows, level with the car-card advertisement

positions and below the straight-line diagrams of the Circle and Hammersmith & City Lines.

Roof-mounted fans are also being used for the first time in any Underground production rolling stock. The four in each car can deliver air from the outside in summer or heated air in winter, each blower/heater unit having a capacity of 1.8kW. The heater output is controlled by a thermostat in the car. A further blower/heater is fitted in the driver's cab and is under his separate control.

Interior

The main windows of the car are in $\frac{1}{4}$in toughened plate glass in rubber glazing mouldings. A hinged and lockable inner casement is provided at each window to form a door pocket, with the sliding doors between the two sheets of glass. On motor cars, a 'No Smoking' symbol is fired into the outer panes.

The ceiling panels are of pre-formed melamine-faced hardboard with glass fibre insulation between the hardboard and the roof. Bodyside interior panels are also of melamine-faced hardboard secured by aluminium mouldings. A kicking strip is applied to the panelling on draughtscreens, between the horizontal seats, and on the risers of the seats themselves.

Apart from the car advertisement spaces, illuminated advertisement frames are provided on both sides of the ceiling-height cross partitions at each pair of draughtscreens. They are illuminated by fluorescent tubes. Hand-grips of the usual London Transport pattern are provided in two rows down each car along the purlins.

The seats, already mentioned, have cast aluminium end frames. The melamine-faced backs of the transverse seats form the base of the draught screens which are carried upwards by $\frac{3}{8}$in toughened plate glass with grab poles of stainless-steel sheathed steel tubing at the gangway edges. Some of these grab poles incorporate emergency alarm handles. The screens are set back from the doors to allow passengers to stand against them without obstructing the passenger flow through the doorways.

The general colour scheme of the cars is Warerite Stardust Blue used on all transverse bulkheads and draughtscreen surfaces and bodyside panelling up to the card advertisements. Doors and ventilator grilles are painted to match. Partition doors are finished in Warerite Pimento Red No 7. Seat end castings are painted dark blue to match the leather facings; the seats themselves are covered in a blue and green moquette. Leather facings for seats and backs are dark blue to match the darkest blue in the moquette pattern.

Driver's Cab

The driving cab bears a marked family resemblance to that of the Victoria Line stock. A neat control desk carries a combined traction and brake controller and an instrument panel with edge lighting. The controller, on the left of the desk, is rotated clockwise for motoring and anti-clockwise for braking. It controls all braking, including the electro-pneumatic and the Westinghouse brakes. On the right of the desk is a key-operated switch for selecting forward, reverse, or off positions. The desk on the other side of the gangway incorporates miniature circuit-breakers for various functions, replacing switches and fuses in the same way as on the Victoria Line trains. Other push-button controls are placed in a panel on the wall above and to the left of the driver's control desk. On the rear wall of the cab are the door controls - duplicated with a set on each side - circuit breakers, folding seats for the driver and an instructor, cases for the communications equipment, and a new type of parking brake.

The parking brake is actuated hydraulically, but to help the driver and reduce the physical effort needed to pump up the necessary pressure, a motor-driven pump is provided. If necessary, in emergency, pressure can still be provided by a hand pump.

Other features similar to those on the Victoria Line stock have been incorporated or provided for. For example, provision has been made for carrier wave equipment so that the driver can talk to the regulator in the control room, but the equipment itself is not being fitted because it would serve no purpose

until all trains on the Circle and Hammersmith and City Lines are similarly equipped.

Standard Drico communication equipment is being used initially. Inter-train radio, also, has been prepared for but not fitted. A public address apparatus with loud-speakers in all cars has, however, been fitted so that drivers can make announcements if needed. There is also a cab-to-cab telephone system.

From his cab, the driver can isolate part of the train electrically should a fault develop and, should a train stall and need to be pushed out, a calling-on light, like that on the Victoria Line trains has been fitted to signal to the driver of the propelling train. Some of these features, together with reversibility, have required extra wires along the train and the automatic couplers at the outer ends of each two-car set have 76 studs against 64 in the A stock. The extra 12 studs have been accommodated by reducing the diameter of all studs except the ones in the centre row which carry the heavier currents.

Air Supplies

Air for door operation, brakes, etc is provided by compressors mounted below the floors of the trailer cars. They are either Reavell/Maudsley two-cylinder or Westinghouse three-cylinder machines. Synchronised operation is ensured by a new method, each compressor contactor having two operating coils. One coil is fed from each end of the train, giving a much greater reliability by duplicating the compressor control feeds.

DISTRICT ELECTRIC ROLLING STOCK

7

P.R.Connor

The 'F' stock, which was not included in the original improvements plans, also underwent some changes during the late 1920's. One train of this stock was fitted with electro-pneumatic brakes by Westinghouse in 1928. The original air brake was retained but the new equipment was superimposed on it to provide a rapid application and release of brakes. This device had already been tested in the United States with satisfactory results, and it was decided to see if it was suitable for use on the Underground.

The advantages of the new brake over the original pure pneumatic equipment were enormous; when the driver moved his brake handle to the application position air was admitted, by means of electrically operated valves, to all brake cylinders simultaneously instead of the gradual application sequence of the air brakes. Releasing the brake was just as easy, and the time taken to bring the train to a stand, and to restart it, was much reduced. The driver was also able to obtain many more varied degrees of retardation and thus he had more positive control over his train.

The EP brake proved very satisfactory and was fitted to all the 'F' stock by 1930. It was also fitted to new tube stock being delivered at the time, and subsequently became the standard brake - although much improved in later years - on all lines of the Underground.

The reconditioning and modernation of the District rolling stock was carried out between 1928 and 1930 and during this period a new system of car numbering was introduced. The new numbers were allocated as follows:-

Stock	New Numbers	Type	Total	
B	1 -37 (odd nos only)	EB Motors	19	
	2 -36 (even nos only)	WB Motors	18	
	1000 -1095	Reconditioned Trailers	96	
	1200 -1260	Trailers due for scrap	59	(a)
	1700 -1717	Control Trailers	18	
C	100 -130 (evens only)	WB Motors	16	(b)
	101 -131 (odds only)	EB Motors	16	
	132 -150 (evens only)	WB Motors	10	(c)
	133 -151 (odds only)	EB Motors	10	(c)
D	152 -164 (evens only)	WB Motors	7	
	153 -181 (odds only)	EB Motors	15	
	183 -197 (" ")	EB Motors	8	(c)
E	200 -224 (evens only)	WB Motors	13	
	201 -225 (odds only)	EB Motors	13	
	226, 228	WB Motors	2	(c)
	227, 229	EB Motors	2	(c)
F	760 -799	Motors	40	
	1900 -1911	Control Trailers	12	
	1588 -1599	1st/3rd Trailers	12	
	1664 -1699	3rd Trailers	36	

G	230 -294	(evens only)	WB Motors	33
	295 -327	(odds only)	EB Motors	17
H	800 -951		Trailers	152
K	499 -699	(odds only)	EB Motors	101

Notes

a) Only 10 of these cars actually appeared with the new numbers, the others were all scrapped before they could be renumbered.

b) Six of these cars were turned WB to EB in 1932 and renumbered 231-241 odd numbers only.

c) These cars were originally trailers and were converted to motors and renumbered under the new system.

d) These cars were originally 'B' stock motors and were converted to trailers and renumbered. Some 42 of these were converted in 1924 and renumbered 1400-1431 and 1600-1609 at that time. (See part 6)

The District's new policy of wiring motor cars so that they could only work in one direction becomes apparent in this list. Cars which faced westbound (WB) were allocated even numbers and those facing east (EB) had odd numbers. As originally renumbered however, the 'F' stock did not correspond to this plan, and they were renumbered again in the following way:-

12 Double-equipped WB Motors	776-798	evens only
13 Double-equipped EB Motors	777-799	odds only
15 Single-equipped EB Motors	745-773	odds only

As all the control trailers faced west those with odd numbers were renumbered 1912-1922, the whole batch then having the numbers 1900-1922 evens only. During the renumbering many cars appeared with the letter A after the old number so as to avoid confusion with the new numbers.

The renumbering was completed early in 1930, by which time plans were being drawn up for new rolling stock to work services on the proposed Upminster extension. There was also a scheme in preparation for the extension of the Piccadilly Line westwards from Hammersmith. This latter idea was not new; it had been proposed as early as 1913, and in 1922 a map appeared in some publicity photographs of new Standard tube cars which showed the Piccadilly Line as running from Finsbury Park to Hounslow and Richmond.

The present Piccadilly services however, were first introduced in 1932, and the District was then confined to working the Ealing, Richmond and Hounslow (rush hours only) services. A single wooden motor car (No 37) was fitted with cabs at both ends and air-operated doors and worked the branch from South Acton to Acton Town.

The loss of District services in West London was balanced by the opening of the Upminster extension in the east. The extra cars required were ordered from the Union Construction Co. of Feltham. This company was actually a subsidiary of the Underground Group and was responsible for a large number of Standard tube cars, the conversion of the Central London line stock to air doors and some London trams, in addition to this batch of District cars. These vehicles were known as the 'L' stock and consisted of 8 motor cars and 37 trailers. Some of the trailers were to replace more scrapped 'B' stock trailers.

These cars were merely a development of the straight-sided clerestory-roofed type so common on the District. There was some tidying up of the bodywork and they had a smoother appearance than previously. Headlights were grouped below the offside cab window, as on the 'K' stock of 1927, but windows were larger and the seating rearranged, with the number of seats standardised for each car at forty. One innovation on the new cars was the fitting of a sliding door at the guard's position at the trailing end of the motor.cars, in place of the hinged door of the 'G' and 'K' stocks. In addition to the two pairs of double doors on each side there were single sliding doors at the ends of trailers.

The electrical equipment was of the new B.T-H. type with WT54B motors as on the 'K' stock. The bogies were A2 (motor) and K2 (trailer) set 34ft apart. Brakes were Westinghouse pneumatic so the cars could operate with all other types. Although other Underground lines were now equipped with air-operated doors the District had such a large number of hand worked doors that conversion was considered too expensive at this time, although the 'L' stock designers may have taken future conversion into account, hence the sliding guard's doors.

Interiors continued to have the usual green and cream

finish with varnished woodwork and moquette upholstery. Lighting was also similar to that of the 'G' and 'K' stocks, and twelve heaters were provided in each car as usual. Measurements were as for the 'K' stock except the length was increased to 49ft 8ins over headstocks. The cars were numbered 700-714 (motors) and the trailers, which were all composites with two partitions, were numbered 1300-1336. The motors were all Westbound, and were therefore allocated even numbers only.

When the delivery of the 'L' stock had been completed in October 1932 the life of the District Railway as a separate company was nearing its end. The London Passenger Transport Board was due to take over all the tube lines and the District and Metropolitan Railways from July 1933. During these last months the only alterations in the rolling stock position were the withdrawal of 18 'B' stock trailers and 12 'H' stock converted trailers. Also, while the 'L' stock was being delivered, 6 'C' stock WB motors were turned to face east. The totals of passenger cars taken over by London Transport thus became:-

234 EB motors 114 WB motors 333 trailers

It will be seen that there were twice as many eastbound motor cars as westbound. This was because the standard train formation on the District had, by this time, become based on the four car unit, with two car units added to the east end to make six or eight cars as required. An 8 car train therefore consisted of:-

WBMotor-Trailer-Trailer-EBMotor-Trailer-EBMotor-Trailer-EBMotor

The train crew on all trains now consisted of Motorman and Guard, except that on eight car trains there was a front guard as well as a rear guard. Two guards were necessary as many platforms were slightly shorter than an 8 car train, and the crew was required to lock the middle doors at stations where they did not open onto the platform.

The original system of passing the starting signal from car to car up to the driver was superseded when guards were provided with brass tipped flags. To give the starting signal, the rear guard touched two wires running the length of the platform with his flag. This completed a circuit which rang a bell near the driver's cab as the signal to start. These arrangements had drawbacks, as the guard had

leave his position to touch the wires and occasionally got left behind if the driver was very quick off the mark. The system remained in use until the early 1950's when the last of the hand-worked door stock was withdrawn.

As far as train formation was concerned the 'F' stock was, as usual, the odd man out. This stock was largely confined to working peak-hour trains in the formation WB Double-equipped Motor-3rd Trailer-1st/3rd Trailer-EB single equipped Motor-WB control Trailer-3rd Trailer-EB double equipped Motor. The trains were often uncoupled at Acton Town, the 5-car portion going to Ealing, whilst the three car part went to South Harrow or Rayners Lane. The uncoupling operations ceased after the introduction of the Piccadilly services in 1932, but the trains retained their formation until they underwent reconstruction by London Transport, in later years.

- to be continued.

SOCIETY NOTICES

Photographic Competition

As a result of requests from members, a third section is being added to the competition - for colour prints. The general rules (as printed on p165 of the October Journal) will apply to all three sections, but colour prints entered will also need to comply with the following:

C. Rules for Colour Prints

13. All colour prints entered must be approximately postcard size.
14. On the reverse of all colour prints entered are to be clearly written the name and address of the competitor, the subject, and the date and place of taking the photograph.
15. No entry fee will be payable, but all colour prints entered will become the property of the Society, unless the entrant specifically requests their return and sufficient postage is enclosed with the entry to cover the cost. The copyright will remain the photographer's.
16. Colour prints submitted will be at the entrant's risk while in the possession of the Society.

All entries in each of the three sections may be sent by post to the Editor at 62 Billet Lane, Hornchurch, Essex, RM11 1XA, or handed to any member of the Committee.

Modelling

At the modelling evening held recently, it was agreed that the Society should continue pushing ahead with plans for an active modelling section. It is envisaged that, providing enough people are interested in giving practical help, a Society layout can be built up in stages, and a layout which could form a suitable basis for this has been devised. The Modelling Secretary, Bob Greenaway, has received some offers of help already and has written to a number of members known to be interested in this project. If you would like to assist, but have not heard from him, please let him know as soon as possible, and he will send fuller details to you on receipt of an sae. (Address: R.J.Greenaway, 203 Popes Lane, London, W.5 4NH.)

Journal Back Numbers

Frequent requests are received, particularly from new members, for back numbers of the Journal. To save unnecessary writing for issues no longer available, we append a list of copies which are still in stock:

1961 - Preliminary Issue - Out of Print
1962 - All except January
1963 - All
1964 - July only
1965 - All
1966 - All
1967 - All
1968 - All
1969 - All
1970 - February, April, May, June, July, August, September.

Indexes are available for 1963, 1964 and 1967.

Most of these issues are held in reasonable numbers, but in a number of cases only single copies are held.

Orders should be sent to S.E.Jones, 113 Wandle Road, Morden, Surrey, accompanied by the appropriate remittance; prices are -

1965 and later - 2/- per copy
1964 and earlier - 6d per copy
Indexes at same prices dependant on year
All post free.

19.00 for 19.15 Friday 13th November at Hammersmith Town Hall. A Paper will be read by J.G.Bruce, B.Sc.(Eng)., F.I.E.E., F.I.Mech.E., M.Inst.T., Mechanical Engineer (Running - Railways), London Transport Executive. Mr.Bruce's subject is "Some Comparisons in Operating and Engineering Practices with other Underground Systems". This is not the first time that Mr.Bruce has addressed the Society, and on the previous occasion he provided us with a most enjoyable and educative evening; there is no doubt that this new paper will be equally informative.

Saturday 21st November Visit to the Victoria Line; names to S.E.Jones, 113 Wandle Road, Morden, Surrey accompanied by a stamped addressed envelope, as soon as possible please.

19.00 for 19.15 Friday 11th December at Hammersmith Town Hall. A Talk will be given by Paul Carter entitled "Main Line on the Metropolitan". Mr.Carter is already well known to some of our members as the Secretary of the Greater London Industrial Archaeology Society; what is not known so well is the fact that Mr.Carter was, at one time, a British Railways driver on the Metropolitan Line. This will be a reminiscent evening, and should give the steam enthusiasts a great deal of pleasure.

ADVANCE NOTICE - VISITS TO OTHER SYSTEMS

It is hoped to organise a visit to the Glasgow Underground in the Spring of 1971, and it is now expected that our visit abroad next year will be for a weekend to Brussels. Fuller details will be given in the next issue of UndergrounD; also further details will be given next month of the two joint trips which will be made next year with The Channel Tunnel Association to the workings at Folkestone Warren and at Sangatte.

THE TAIL LAMP

...my hay fever during June, though definitely caused by pollen, became much worse when I travelled by Tube -

letter to Evening Standard 7-7-1970

A secret market garden in the tunnels, perhaps?

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