THE INTERNATIONAL LIGHT RAIL MAGAZINE

TRAMWAYS & URBAN TRANSIT

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MIDLAND EXTENSIONS IN FOUR YEARS?

NEW HOPES FOR LEEDS SUPERTRAM

TECHNICAL 'BUGS' DELAY CROYDON LAUNCH

HAMPSHIRE: QUALITY FROM DAY ONE

FAREWELL TO THE PITTSBURGH PCCS

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Tramways & Urban Transit is sent free of charge to all paid-up members of the Light Rail Transit Association. You are welcome to join the LRTA - details can be obtained from the Membership Secretary, 23 Shrublands Close, Chigwell, Essex IG7 5EA, or elsewhere in this issue.

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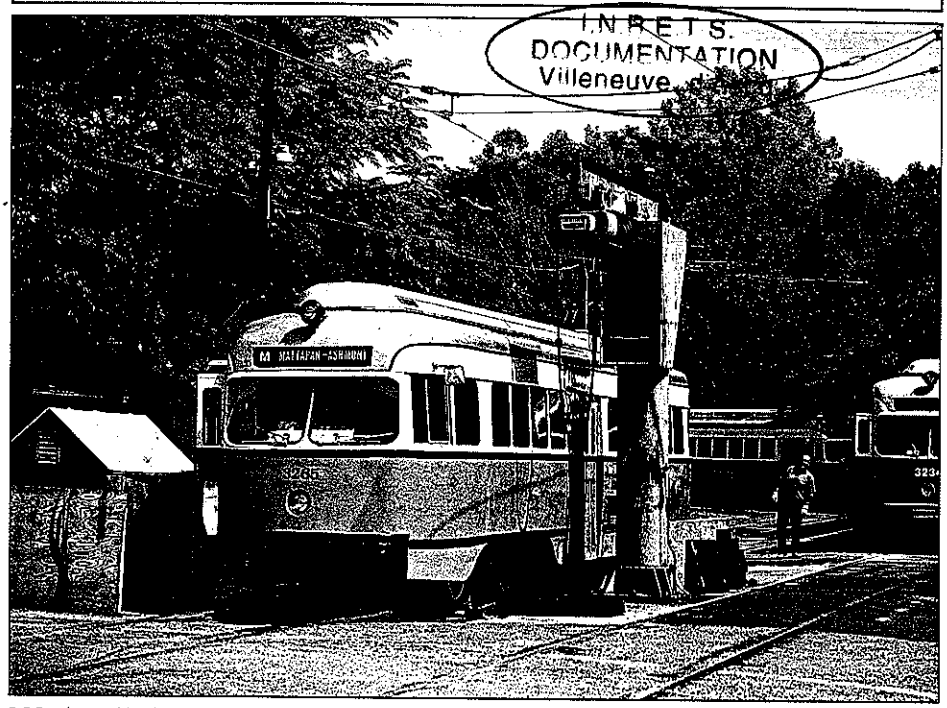

PCCs abound in this issue. On 3 September, Boston's first refurbished PCC, 3235, resplendent in its new 'traction orange' colour scheme, made its first test trip on the Mattapan–Ashmont line. **Clark Frazier**

NEWS Four-year countdown begins for new Midland Metro lines; Technical bugs delay Croydon opening; New hopes for Leeds; No fares levy for Docklands, Metrolink needs £1254m to extend to 65 miles; Light rail for East Lancashire? Compiled by John Symons. 444

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FRONT COVER: This month should see the inauguration of tramway operation in Croydon, south London, with public service on the line between central Croydon and Wimbledon (using the former Southern Electric railway alignment between West Croydon and Wimbledon). Here, one of the Bombardier-built articulated trams is seen in George Street, Croydon, on route 1 to Wimbledon. *A. P. H. Velthoen*

Light rail for East Lancashire?

The East Lancashire Partnership, made up of local authority, health trust and higher educational establishments, has called for a £74 million rapid transit system to be operational by 2006.

This would be made up of a combination of light and heavy rail services and integrated bus services marketed under a single identifiable brand designed to increase public transport usage in the area by 20%.

As well as upgrading heavy rail lines in the area, including construction of seven new stations, the core of the network would be a light rail line linking Blackburn, Burnley and Colne. A further line linking Clitheroe with Bolton, a route currently covered by a comparatively recently reinstated heavy rail service, is also suggested. A full feasibility study is to be carried out next year.

Key transitional post for London

David Hutchinson has been appointed transitional head of the roads unit in the team working towards the creation of Transport for London (TfL), due to start operating after appointment of the new London Mayor on 3 July 2000.

TfL is the new executive body which will be formed to deliver the Mayor's transport strategy for London. Mr Hutchinson will be responsible for highways and traffic control, supervising the merger of the Highways Agency London operations, Traffic Director for London, Traffic Control Systems Unit and London Transport's Bus Priority Unit.

TfL will also have responsibility for co-ordinating all London's public transport operations, absorbing London Transport and assuming control of the DLR and London River Services.

T&W drivers £700 for Millennium

Tyne & Wear Metro will operating over the Millennium with drivers being paid £700 for working a night shift.

This will cost Nexus over £50,000 and travel after midnight will be free, although it is not known whether sponsorship will allow the free period to be extended to earlier in the evening. Newcastle, along with Edinburgh and London, will be the focus of millennium celebrations on national television and events at Haymarket and the Quayside will continue until 0140 on 1 January.

Four-year countdow new Midland Metro

The West Midlands Passenger Transport Authority is actively considering what is needed to deliver two proposed Midland Metro extensions - the Wednesbury to Merry Hill branch, and Birmingham city centre tramway from Snow Hill to Five Ways.

Both are programmed for completion in March 2005, as it is expected that formal procedures for the two lines will be combined.

The viability of the Merry Hill is to be established before the end of the year, and the city centre line by February next year. Then would follow preparation of outline business case in March with submission in May.

If all goes well, a submission of Transport & Works Act orders will be made in August, with their finalisation 15 months later in November 2001. Tenders will then be invited in December 2001, for construction to start in March 2003.

What appears to be a very realistic programme is subject to adequate funding being identified, but Chelsfield, the owner of Merry Hill Centre, has now pledged £35 million towards the £100 million estimated costs of the scheme, £10 million more than it originally offered. This would be conditional on additional land being granted planning permission for commercial development.

Although no formal announcement has been made, a member of the PTA has leaked information on the formal penalty payments to be made by the Altram consortium for failure to open Midland Metro within the contracted period.

It is claimed that the Executive is writing off £1.5 million of the £4.5 million penalty fine, a figure which the Passenger Transport Executive has refused to confirm.

However, it has indicated that all claims relating to the delayed opening were negotiated with the consortium with a view to ensuring that operational relationships were not constrained by ongoing monetary disputes. A net gain to the PTA of £2.3 million is expected from the settlement.

At the time of writing formal introduction of the six-minute headway service between Birmingham and Wolverhampton had still to be announced, although as far as possible trams are operating to this headway during the daytime.

Five bid for Tube business

London Underground has announced the names of the five short-listed consortia who are bidding for the two concessions to upgrade, maintain and operate the deep level Tube network across the capital.

The two concessions comprise the Bakerloo, Central and Victoria lines (BCV) and the Jubilee, Northern and Piccadilly lines (JNP).

Three of the short-listed bidders are equipped to bid for both concessions. The consortia that have been named are: LINC (Bombardier Prorail/John Mowlem/Fluor Daniel/Alcatel/Anglian Water); Metronet (Adtranz/WS Atkins/Balfour Beatty/Seeboard/Thames Water); and TubeRail (Brown & Root/Alstom/Amec/Carillion).

It has also been announced that the NewMetro consortium (comprising, respectively, Siemens/Taylor Woodrow/Innisfree/Gibb/Mott MacDonald) is to bid for the BCV contract only and Tube Lines (Amey/Bechtel/Halcrow/Hyder Investments/Jarvis) will bid for the JNP concession.

The groups have been invited to tender by next spring, but the contract for the Underground's surface lines (the Circle, District, Metropolitan, Hammersmith & City and East London lines), which is being negotiated in an exclusive manner with Railtrack, is more advanced than the Tube routes.

Heads of agreement have already been signed, and Railtrack now has until 31 March next year to put the funding in place and move forward to complete the formal contract.

The formal opening of Midland Metro was performed on 14 September by Princess Anne, the Princess Royal. She is pictured with West Midlands PTE Director General Rob Donald. *Mike Ballinger*

n begins for lines

Wolverhampton is currently the limit of Midland Metro operations. How long before there are more extensions. This is car 07 on 7 June this year *John Lee*

Technical bugs delay Croydon opening

It became evident as we went to press that the promised opening of the first of the Croydon Tramlink routes during November would not be achieved.

Local press reports indicate this is due to technical problems affecting computerised signalling and control systems which co-ordinate traffic and tram signals at various junctions. Malfunctioning has caused some delays to traffic.

The Railway Inspectorate is not yet ready to sanction passenger-carrying, and has made a number of other stipulations which are currently being worked on throughout the system.

It still appears that the Wimbledon and the New Addington sections will be the first to open, hopefully immediately before Christmas, with Beckenham Junction-Elmers End possibly early in the New Year.

In early November shadow running over the full working day was in operation with trams traversing the central area at almost intended service interval levels. At New Addington, trams stopped at the single track section just short of the terminal station. The Beckenham Junction and Elmers End sections were not receiving a regular shadow service and were somewhat behind the remainder of the network in terms of the standard of finish.

Most stops are around 80% complete with shelters and ticket machines in the course of installation, although vandalism has proved a problem with graffiti apparent on many items of lineside equipment.

Trams on test have been stoned and a on one occasion a balk of timber suspended from the overhead at driver head height. Fortunately the tram was able to stop before any damage could be caused.

A second tram, 2542, has appeared in an overall advertising livery, this time with a yellow base for the Amey construction group. Postcard views of the two advertising trams are reported as best sellers at the local tourist information centre! Up to a third of the fleet is likely to appear with advertising.

The Tramlink information office at Sutton House, George Street which had been operated by Croydon Council throughout the construction period, closed on 24 September.

The shop is being refurbished for reopening by the operating company which is to call it the Tramlink Shop. The shop will provide fare and timetable information and sell tickets and merchandise. It will also act as the central lost property point.

Trams running on the shadow service are displaying a variety of destinations, not always synchronised through the four destination displays. This problem is being addressed.

The destination blinds contain routes other than those served by the existing tram network, including the former main road tram route to Purley and even the Shepherds Bush to Uxbridge corridor which has featured in proposals for conversion to tram. These destinations were included to the specification of First Centrewest, which will be the Croydon operator.

No fares levy for Docklands

London's Docklands Light Railway extension to Lewisham was expected to open during November - some months earlier than programmed.

Deputy Prime Minister John Prescott has confirmed that fares will be charged at the standard London tariff without the 50p surcharge incorporated into the original operating contract by the previous government.

He has also agreed to an additional £20 million access to funding to enable a further 12 light rail vehicles to be acquired. These will be needed by 2002 to cope with increased passenger demand as a result of the extension and the interconnection with the Jubilee Line.

On 5 October, a DLR train set being manually driven following an earlier signal failure, derailed between Westferry and Poplar at 1040. The network was shut down for two hours and services to Tower Gateway and Bank suspended for most of the day.

Metrolink needs £254m to extend to 65 miles

The *Manchester Evening News* believes it is making good progress with its campaign to persuade the Government to provide funding for the full package of three major Metrolink extensions - £254 million from public funds over a period of five years.

Dubbed the Metrolink for the Millennium Campaign, it has focused on Zürich as the model transport undertaking but seeks to provide for Manchester a 65-mile tram network at half the cost of the Swiss city's current 67-mile system.

The Salford Quays extension is due to open this year and the onward projection to Eccles will open in the spring. The local transport plan provides for a package of three further lines over five years with economies of scale if all are included in the same funding and contract packages.

These lines would serve Oldham and Rochdale; east Manchester and Ashton-under-Lyne; and Wythenshawe and the airport. Also being studied is a possible link from East Didsbury to Stockport which could be achieved for around £95 million but would carry 2.5 million passengers a year and remove half a million car journeys from the road network.

Public consultation on the proposal will now be undertaken and if necessary an order under the Transport & Works Act promoted. Trams to the Trafford Centre are also still not ruled out as the line is mentioned in the Greater Manchester provisional local transport plan. Developer funding would be necessary for its construction.

With new trams delivered for the Eccles extension, the Railway Inspectorate has given consent for the Cornbrook to Broadway section to be used for driver training and safety and reliability tests. Following operation of the necessary shadow service, it is expected that public service will start before the end of the year provided the Inspectorate is satisfied.

Car stickers reading "I'd rather be riding Metrolink" are available from the Manchester Evening News at 164 Deansgate, M60 2RD or can be ordered online at *www.manchesteronline.co.uk*

72% of UK homes have at least one car

Publication of the 25th annual issue of Transport Statistics Great Britain (Government Statistical Service £30) shows that passenger journeys on national railways increased 5% from 846 million (1997/98) to 892 million in 1998/99.

Over the last 25 years the number of rail journeys has increased by 23%. Over the same period the number of coach and bus kilometres has increased by 22%, although patronage has virtually halved.

A total of 72% of all households now has at least one car with over 23 million private vehicles registered, and 28% of households have two or more cars available with 81% of the male population holding a driving licence. The number of females holding a licence has increased from 41% to 58% over the last ten years.

FastWay guided bus for Crawley?

Crawley Borough Council, along with its partners West Sussex and Surrey County Councils, Reigate & Banstead Council, BAA Gatwick and British Airways, is pursuing a guided bus network for the Crawley-Gatwick corridor.

The first phase of the system could be in place by 2002 if funding can be obtained, linking Crawley with Horley via the industrial areas and Gatwick Airport. Within Crawley there would be two spurs serving Broadfield Barton and Three Bridges station.

Totalling 24 km, about 4 km of the initial routes would be guided, mainly in areas avoiding congested road junctions. The network would be progressively extended throughout the town such that no one would live more than a ten-minute walk from a bus stop.

The total cost of the first phase is estimated at £25 million and funding from local authority and central government could meet half of this. Additional funding would be raised from an operator partner and developers through community benefit payments linked to development opportunities.

Jubilee Line delays

The planned operation of London Underground's Jubilee Line trains between Green Park and Charing Cross did not take place on 31 October as expected.

The decision was taken to clear the way for test running ready for the opening of the complete system.

Stagecoach wins joint venture in Northampton

The preferred operator for the Northampton Rapid Transit System has been announced as the Stagecoach Group.

Rapid Transit International, promoter of the system, is hoping construction can start in 2000/01 for operation by 2003. This depends upon on the resolution of remaining objections to the Transport & Works Act submission in the Sixfields corridor.

Stagecoach would be through local subsidiary Stagecoach United Counties, which believes competition with services of First Northampton, the unsuccessful bidder, would be minimal as the network will serve new residential areas and park-and-ride sites.

Oxford backs guided bus

Oxfordshire's provisional local transport plan firmly backs the Guided Transit Express (GTE) originally put forward two years ago.

This is expected to provide congestion-free public transport links between the city centre, park-and-ride sites and surrounding commuter towns. A special project company, GTE for Oxford, has been set up to take the project forward and a full implementation study started in May is due for completion next June.

The brief was originally written to cover rail and bus options, but initial cost analysis shows guided bus would be much more cost-effective. The preferred scheme could now cost £25 million with a significant proportion raised through equity funding, developer contributions and possibly through parking levies. However, some grant-aid will still be needed to meet capital costs. The target date to start operations is 2004/05.

Contributors

Items of news and topical photographs are welcomed by the Home News Editor, John Symons, 17 Whitmore Avenue, Werrington, Stoke-on-Trent, ST9 0LW. Fax 01782 303549.

Contributors this month include *Duncan Anderson, John Babington, David G. Clarke, John Downer, P.M. Jones, Mike Lea, Eric Pounder and Martin Smith.* Acknowledgements are also due to *BCM Transport Group, Centro, Crawley Borough Council, DETR, Fylde Tramway Society, Birmingham Post, Croydon Post, Croydon Guardian, Evening Standard, Manchester Evening News and The Wharf.*

New hopes for Leeds

Alternatives not value for money?

New life has been pumped into the ailing Leeds Supertram project by the publication of West Yorkshire's new local transport plan.

It follows a study carried out in consultation with the Government's Department of the Environment, Transport & The Regions by Steer Davies Gleave (STG).

This has concluded that alternatives to Supertram are not capable of increasing public transport capacity sufficiently, and that compares favourably with the alternatives against a range of objectives and in terms of value for money. However, the study recognises that funding for the South Leeds network will not be forthcoming at this stage and suggests a revised initial line from Stourton to Lawnswood to give best overall performance.

The plan considers how these truncated proposals can be funded, given that the Government does not see light rail as a first priority. Hopes are pinned on establishing pilot proposals for the introduction of road user charging.

The modified route would basically serve an M1 park-and-ride facility at Stourton and a complementary park-and-ride serving the north Leeds commuter belt located at Lawnswood. Heavy, but seasonal, student traffic to and from the two universities on the route would also be an objective.

The key findings of the SDG study are:

- **The full South Leeds Supertram scheme has available powers, uses proven technology and, measured against both local and national policy criteria, performs well. It would fully support the strategy aims by supporting the Leeds economy, improvements to public transport and regeneration of South Leeds. It is however, expensive at around £150 million with a large proportion of the funding required from Government.**
- **A lower cost, Stourton-only variant would save nearly £60 million and have strong performance in restricted cost-benefit terms. It would, however rely on park-and-ride commuter demand, and reduce the wider benefits through South Leeds.**

Three trams from Charleroi, Belgium, now carry passengers at Fintown, Donegal, Eire. They are used on a 1.5-mile (2.5km) resurrected section of the long-closed County Donegal Railway. The front two cars carry a livery of red and cream, and the third is being repainted from its present colours of black and red. This picture is dated 13 October. *David Smithies*

'Super-route' buses for London

London's bus route 32, which operates between Kilburn Park station and Edgware station was formally launched as a so-called 'super-route' by London Transport Minister Keith Hill on 11 October.

Forming a six-month experiment in traffic control, the route will see intensive enforcement of bus lane and parking restrictions through the use of on- and off-bus camera control and additional parking attendants.

The 32 service serves the Edgware Road corridor which is one of those on the list of possible corridors for light rail conversion.

Public transport is not 'bugged'

Public transport on Britain is expected to function satisfactorily into the new millennium as almost all operators have completed their preparations to ensure that systems will not succumb to the 'Millennium bug'.

All rail transport is now assessed as 100% 'blue' which means that there is likely to be no significant risk of material disruption.

Five of the six light rail systems (Docklands Light Railway, Midland Metro, South Yorkshire Supertram, Tyne & Wear Metro and Croydon Tramlink) are also at the 'blue' level while Manchester Metrolink was still being independently assessed during October. Buses operated by the five largest groupings are also ready.

Photographs please

We are always pleased to receive good-quality photographs of UK systems in operation, with a view to publication. Prints (colour or black and white) and slides should all be clearly marked with the sender's name and address for return at the end of the calendar year.

s Supertram

■ The cost of a high-quality guided bus scheme would still be substantial, with lower capital costs offset by lower revenues and higher operating costs. It would be less attractive to car passengers than light rail. The technology is also unproven in this country.

■ A new preferred initial line is proposed from Stourton to Lawnswood. This would balance the passenger flows and perform better in resource terms.

■ The Castleford rail line option would have the weakest case in terms of higher cost and major feasibility risks.

■ The M621 bus/HGV land could be worthy of further development but there are serious feasibility issues to be resolved.

■ Use of Hunslet Road as a major bus priority corridor would offer the poorest performance in journey time from Stourton. High operating costs means this option would not generate an operating profit.

■ A dedicated rail park-and-ride service would provide a faster journey time and be attractive to a smaller market. However, ongoing revenue support might be required.

The review concluded that Leeds City Council and Metro (West Yorkshire PTE) should examine the role of road pricing in Leeds.

It should determine the optimum configuration of the Supertram option in terms of policy objectives, economic performance and funding requirements and explore alternative procurement strategies.

Road pricing has received little support from the majority of correspondents to local newspapers.

Jubilee extension opens - at last!

London's Jubilee Line extension from Green Park through to Stratford opened in November, albeit without stations at Westminster and Shadwell. It has lessened concerns that adequate public transport to the Millennium Dome site would not be available for its opening at the end of December.

A Monday to Friday daytime service has been provided on the new line, gradually extending to the whole of the Stratford to Waterloo section by early October. However, suspensions of service because of signalling problems have been frequent. At the end of October, notices were posted indicating that the full service linking Stanmore with Stratford would be provided from an unspecified date in November, expected to be in the middle of the month.

Stourbridge branch awaits Parry trial

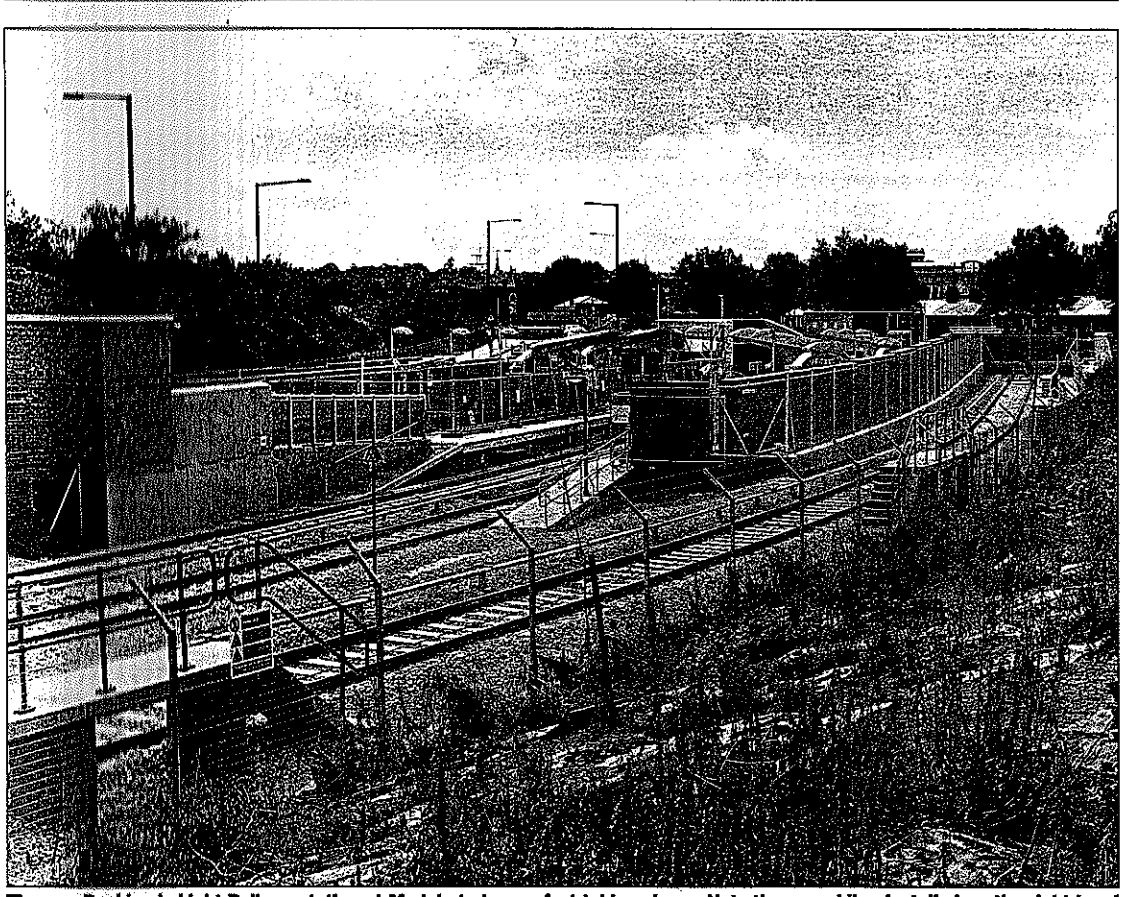
Discussions between Parry People Movers Ltd, JPM Parry Associates and Centro, the West Midlands PTE, have progressed the possibility of introducing an experimental Sunday service on the Stourbridge Town to Junction heavy rail branch during early 2000.

Car 12, which has existed as a testbed vehicle at Cradley Heath, is being fitted out as a 50-passenger light rail vehicle of type PPM50. Discussions for its use are proceeding with the office of the Shadow Rail Authority.

Heritage style tram 9 has been used as a demonstrator vehicle at Cradley Heath for the last two years, although only leased from Multimodal Finance. It is now required by Bristol Electric Railbus, an associate of MMF, and is due to be collected from Cradley Heath for use elsewhere.

Car 11 was subject to type inspection by Her Majesty's Railway Inspectorate on 2 October prior to entering passenger service on the new Welsh Highland Railway. The inspector was generally pleased with the vehicle and prepared to allow it to be operated on passenger service without further inspection subject to certain information and assurances being provided in writing.

These assurances were given and small alterations to the vehicle were completed within a week, and weekday operation on the Caernarfon-Dinas section of the WHR was expected to commence late in October.



The new Docklands Light Railway station at Mudchute is now fast taking shape. Note the new siding installed on the right-hand side of this 18 September picture. *R.L. Sewell*

Blackpool 642 still under test

Passenger operation of refurbished 'Centenary' class car 642 had still not resumed at Blackpool by the end of September, although it has been the subject of occasional tests. The vehicle last saw passenger use in December 1997.

Double deck 'Balloon' 718 entered the bodyshop in early September and has been completely stripped down to its main frame as the next rebuild in the style of 709.

Choice of this tram is unexpected. 709 itself is nearing completion after a repaint, but still lacking some body parts and electrical wiring.

The illuminated car fleet returned to use on tours from 3 September, despite rumours that some cars may not be serviceable for much longer. None of these cars now carries valid commercial advertising.

Black Country Museum

The tramway at the Black Country Museum continues to operate daily (with some reduction from November through to February). Wolverhampton and District 34 carries the main burden of service with Dudley and Stourbridge 5 deputising.

Former Wolverhampton car 49 awaits finishing by the Black Country Museum Transport Group. It awaits completion of two complicated dash top rails before bolting up and final paintwork.

It has already travelled under its own power a couple of times. Wolverhampton horse car 23 is immaculate, but cannot be operated as it is standard gauge.

Trolleybus operation has been suspended during 1999 as reconstruction work of the former Rolfe Street Baths from Smethwick is covering part of the trolleybus route alignment. The replacement road is complete, but not paved and the traction pole bases are in position.

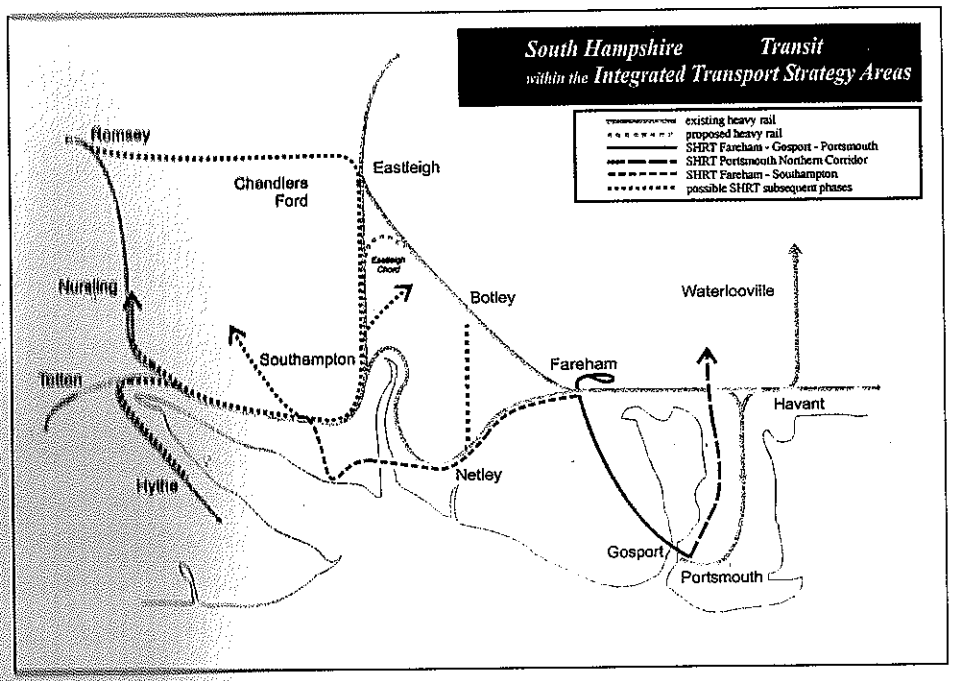
The successful operation of visiting trolleybuses will resume with the 'TV 2000' event planned for 3-18 June. Details and information on operating days and the times of trams and trolleybuses can be obtained by calling 0121 557 9643.

Index for 1999

We plan to publish the index for the 1999 issues of *Tramways & Urban Transit* (Volume 62) in our January 2000 issue.

Hampshire LRT Quality f

Martin Petch, Hampshire Area Officer of the LRTA, talks to Tony Ciaburro, Head of Transport Policy at Hampshire County Council.



Tony Ciaburro enthusiastically champions a new philosophy at Hampshire County Council. The authority is only too aware that the trunk road network is nearing saturation; to cope with demand could involve a ten-lane M27, costing around £300 million.

Hampshire has a total population of 800 000, who make 1.2 million journeys daily, and 80% of these are by car. Clearly, something must be done to alleviate a looming crisis.

As if this were not enough, massive housing development is planned south-east of Eastleigh, and also extensions to the communities of Whiteley, Botley, Knowle and Waterlooville.

The concept of South Hampshire Rapid Transit has already been aired in these pages, and Phase One - the Fareham-Gosport-Portsmouth route - awaits the outcome of the public inquiry which took place earlier this year.

The overall plan has been justified by about 70 separate studies: these demonstrate that it is needed, technically feasible, and economically viable.

The idea of phases has now been dropped, and progress is being made wherever possible for a number of corridors. In this light, a quality partnership with First Hampshire (part of First Group) will soon bear fruit on the Portsmouth-Waterlooville-Horndean route (the A3 corridor).

Working together as virtually one organisation, First Hampshire will supply articulated buses, while the county council, armed with funding from next year's budget, will progressively provide reserved space (using land earmarked for road widening), park and ride at Horndean to relieve the A3M/M27 motorway, and junction priority. Stops will be re-branded as stations, and equipped with all the latest on-line information and smart card ticketing.

Is this installing light rapid transit by the back door? Tony Ciaburro's description of this is that a new public transport system should "ooze quality from day one." Once a reserved track has been created, and passenger numbers surge, something like guided bus or LRT will become more obviously justifiable.

The Fareham-Southampton proposals involve LRT replacing stopping trains on the Netley railway line. Discussions with operators and Railtrack over track-sharing are continuing, with the aim of running trams as far as Woolston, then over the Itchen bridge and directly into Southampton city centre on-street.

There are tantalising plans for all the railway lines in the vicinity of Southampton, but any decisions will have to involve a unitary authority. However, discussions continue with all parties over the re-opening to passengers of the Totton-Hythe and Romsey-Eastleigh rail lines, either in their original heavy rail guise or converted to light rapid transit. Another quality partnership is due to be signed about now with Stagecoach South, operator of many local buses as well as South West Trains.

The overall price tag for South Hampshire Rapid Transit has been estimated at around £300-500 million, which is considerably less than any alternative road scheme for improving the road layout.

Tony Ciaburro is hugely optimistic about what may be achieved through partnership rather than legislation, describing it as 'Hampshire Plc'.

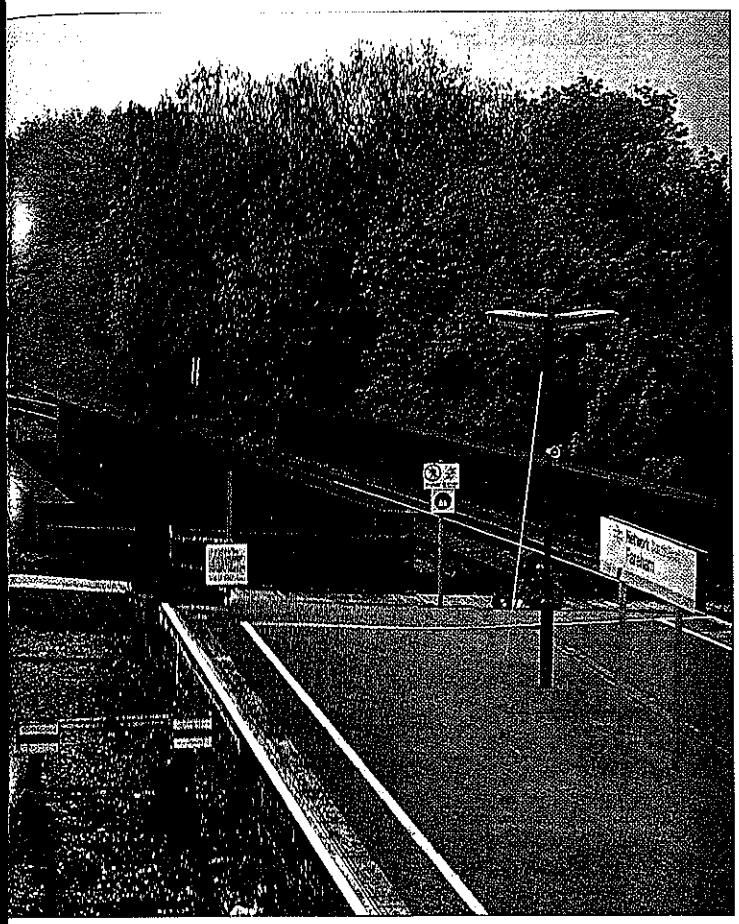
The aim is for a ten to 20 per cent modal shift away from the private car, relieving the motorways and at last offering a very high quality alternative.

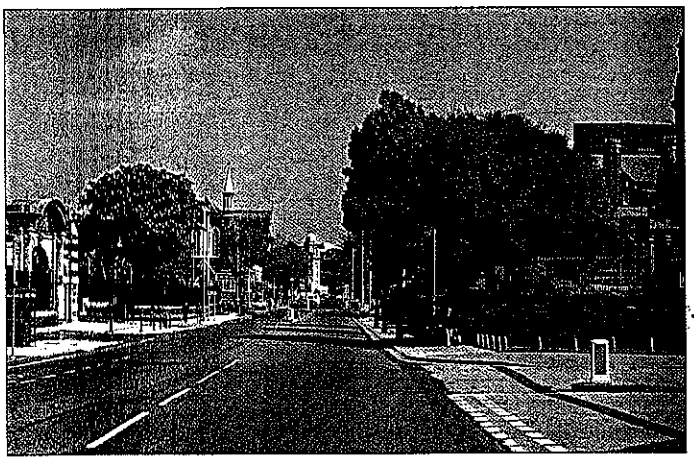
Top: A view of Fareham station looking towards Gosport. The LRT scheme would come up the disused line, cross The Avenue to the right at the railway and continue, then burrow under the north end of the station turning 180 degrees. The stop would be outside the station forecourt, to the left. *All photos: Martin Petch*

Above right: This is how West Street, Fareham, looks today, looking west towards Fareham station. Trains from the Portsmouth and Gosport directions would run eastbound along here to their terminal in Portland Street, then returning alongside Western Way.

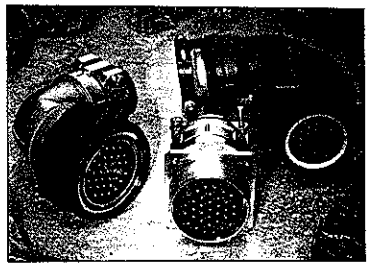
Right: A 1999 view of Edinburgh Road, Portsmouth taken from Queen Street. The double track tramway would pass the gate to HMS Nelson and the Roman Catholic cathedral (both left).

rom day one





AB Connectors offer extra strength and security



AB Connectors will be exhibiting at the Railtex '99 show. It has a brand new industrial connector with a triple start ACME style thread designed to give additional strength and rapid coupling in harsh conditions.

Designed for inter-car jumper cable assemblies in rail use, it is also suitable for heavy engineering applications where specialised coupling is needed to meet security or high vibration hazards. Featuring five key shell orientation, extra wide master key and positive location, the AB3S gives high security when mating in difficult conditions. The extended length coupling nut has a double audible anti-rotation device and offers extra grip and easy handling which is of particular benefit when wearing gloves.

To give maximum performance, the connector body is made from high performance aluminium alloy. The coupling nut can be supplied with an optional rubber cover, giving additional protection against flying ballast and mis-handling. The insulators are made from low halogen/low smoke material, with up to 85 contacts. The AB3S comes with a cadmium free surface finish and in a number of colours. Environmental sealing to a minimum IP67 is assured when mated and sealed back shells and accessories are specified. To give protection against EMI and RFI, connectors have a proven grounding system built into the coupling nut.

The AB3S has common Mil-C-5015 mounting dimensions and is interchangeable with types to the same specification. The connectors accept existing back shells and accessories available from 5015 types. Industry standard 'F80' type crimp contacts and application tooling are used.

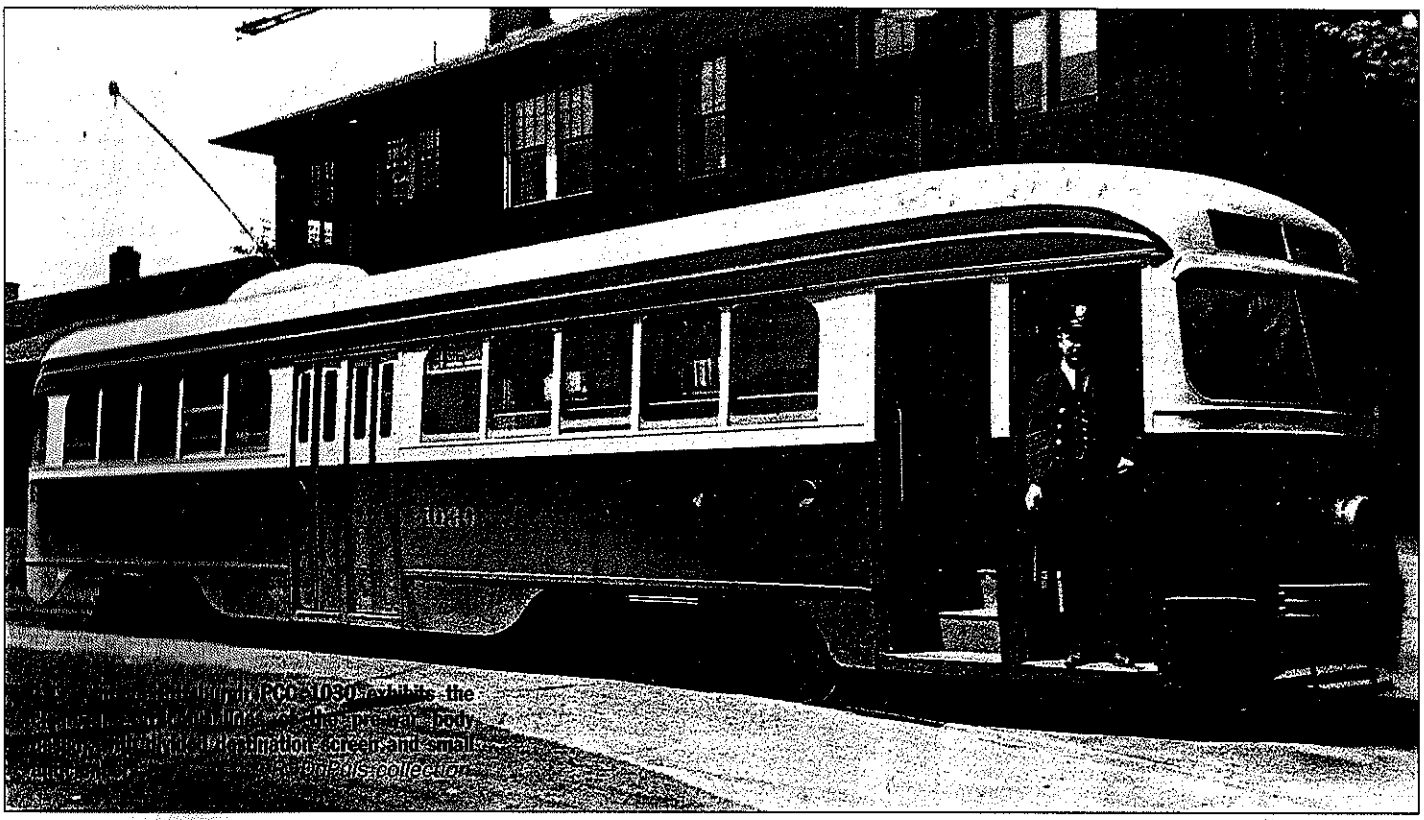
Further information: Ray Everitt, AB Connectors Ltd, Abercynon, Mountain Ash, Mid-Glamorgan CF45 4SF. Tel: 01443 740331. Fax: 01443 741676.

It is now over 40 years since the Atomium first impressed visitors to Bruxelles, but it still provides an excellent backdrop for route 23 from Noord station. Tram 7719 nears the terminus at Heysil on 2 October. It is in a special livery advertising the local transport museum. *Tony Sullivan*

De Lijn coastal tram 6021 stands at the terminus at De Panne/Adinkerke station with SNCB AM 83 suburban three-car electric unit 386 in the background waiting to form a service to Bruxelles via Gent. The date is 2 October. *Tony Sullivan*

Farewell to the Pittsburgh PCCs

PART 1



Roger DuPuis marks the retirement of venerable cars that have to stand aside in the name of progress.

Pittsburgh is poised towards modernising its light rail network, including the eventual construction of new lines. The recent retirement of its last PCC cars represents a positive step in that direction, however regrettable the act may seem from an historical standpoint.

It would seem an appropriate time to reflect on the life and times of this once-mighty fleet of trams, and on the evolution of the fascinating tramway they served so well.

Sixty-three years of Presidents' Conference Committee (PCC) tramcar operation in Pittsburgh ended during the Labor Day Weekend with the suspension of service on the 47D Drake Shuttle between Castle Shannon and Drake Loop. Port Authority[1], the Allegheny County agency which operates Pittsburgh's light rail and bus transit system, announced in July that its last three operable PCC cars (4004/08/09) would be retired with the Drake suspension.

This move likely owed more to the costly obsolescence of the PCCs; PAT's plans call for an upgrade of the line but keeping the PCCs in operation until construction begins would have been prohibitively costly. In recent years, the mile-and-a-half long shuttle carried fewer than 50 passengers on most weekdays.

The venerable trams are gone, but the line is slated for upgrading to light rail standards as part of Port Authority's USD 500 million (US) Stage II light rail plan currently under development. Stage II is the follow-up project to Pittsburgh's introductory Stage I LRT project of the 1980s.

Stage I LRT achieved a comprehensive systems reconstruction and upgrading of the 10.5 mile/16.8 km 'main line' between downtown Pittsburgh and the suburban communities of Bethel Park and Upper St. Clair via Mount Lebanon and Beechview. A new terminus was built at the South Hills village shopping mall in Upper St. Clair. Adjacent to this, a new 60-acre maintenance facility and operations control centre was built, superseding the octogenarian shop and yard facilities at South Hills Junction. The crown jewel of the scheme was a 1.1 mile/1.76 km subway carrying trams below the central city.

Stage II LRT plans call for the reconstruction of 12 miles/19.2 km of tramway which was not upgraded under Stage I, including the suspended Overbrook and Drake lines and the Library line, on which LRVs operate over a right-of-way which has changed little since tramway times.

Reconstruction of Overbrook is scheduled to begin in early 2000. Funding for Library and Drake has yet to be secured; work is not likely to begin before 2004, when Overbrook is tentatively expected to re-open. Stage II also calls for infrastructure improvements to Stage I stations and way, the purchase of 28 new LRVs, upgrading of Port Authority's LRT operations control centre and building more parking spaces for rail commuters, and rehabilitation of its 55 Duewag LRVs.

The birth of a legend

It was in Pittsburgh that the PCC design successfully faced its toughest challenges. At its peak, the former Pittsburgh Railways Company (PRCo) operated a tramway comprising more than 600 miles/960 km of broad

gauge (1588 mm) track. PRCo's empire included a wide variety of construction from street running city routes to two interurban lines, all of which climbed up, over and around the wickedly-hilly terrain of southwestern Pennsylvania.

The many bridges, tunnels, trestles and other structures which carried PRCo's lines came at great cost, but were essential to properly serve the area's widely-dispersed population. PCC trams rose unflinchingly to the challenge, hauling hordes of Pittsburghers over the rugged landscape with gradients in excess of 12%, despite deferred maintenance during PRCo's later years.

PRCo was an enthusiastic member of the Electric Railway Presidents' Conference Committee, which spearheaded the PCC project. The second production model car constructed, PRCo 100, arrived in Pittsburgh on 26 July 1936, and was diverted from the original 100-car Brooklyn order to demonstrate its Westinghouse equipment in the home city of the manufacturer. Often overlooked by New York tram fans touting Brooklyn & Queens Transit as the premier PCC operator, number 100 carried passengers on a special demonstration route beginning in August 1936. Car 100 entered regular service on route 50 Carson Street the following month, and revenue operation of B&QT PCCs commenced 1 October 1936.

Within two years, PRCo observed ridership gains of five-ten percent on PCC-equipped routes. Fewer PCCs were required to hold down the same schedules previously worked by a greater number of conventional cars; the PCCs were faster, and they suffered fewer accidents and breakdowns.

For PRCo, the 'million dollar streetcar' was worth its weight in gold. The company, with a history of financial instability, fell into a lengthy 14 year receivership in 1937. It nevertheless acquired a total fleet of 666 PCCs by 1949. Pittsburgh boasted the third largest fleet of PCC cars in North America behind Chicago and Toronto, with their 683 and 745 cars, respectively. PRCo's PCCs would come to outlast their sisters in both cities.[2]

Car designs

Dominating the fleet were 565 air-electric trams of the pioneering pre-war body design; standardisation helped reduce cash-starved PRCo's maintenance and operation costs. Subtle cosmetic variations within this group included two windshield designs (nearly vertical vs. a 24-degree layback), small vs. large anticlimbers and the use of chrome ornamentation (viz., headlight wings, trim, etc.) which was omitted from wartime cars.

ERPCC successor Transit Research Corporation (TRC) persuaded the PRCo to allow one car from its 1600 series order to be constructed as a prototype of the post-war model PCC, with design improvements including all-electric braking, 30 degree sloped windshields, redesigned side windows and supplementary standee windows. The tram also featured high-capacity ventilator fans concealed beneath a large roof duct. PRCo took delivery, in 1945, of the first post-war all electric PCC car, which was fondly christened the Queen Mary.

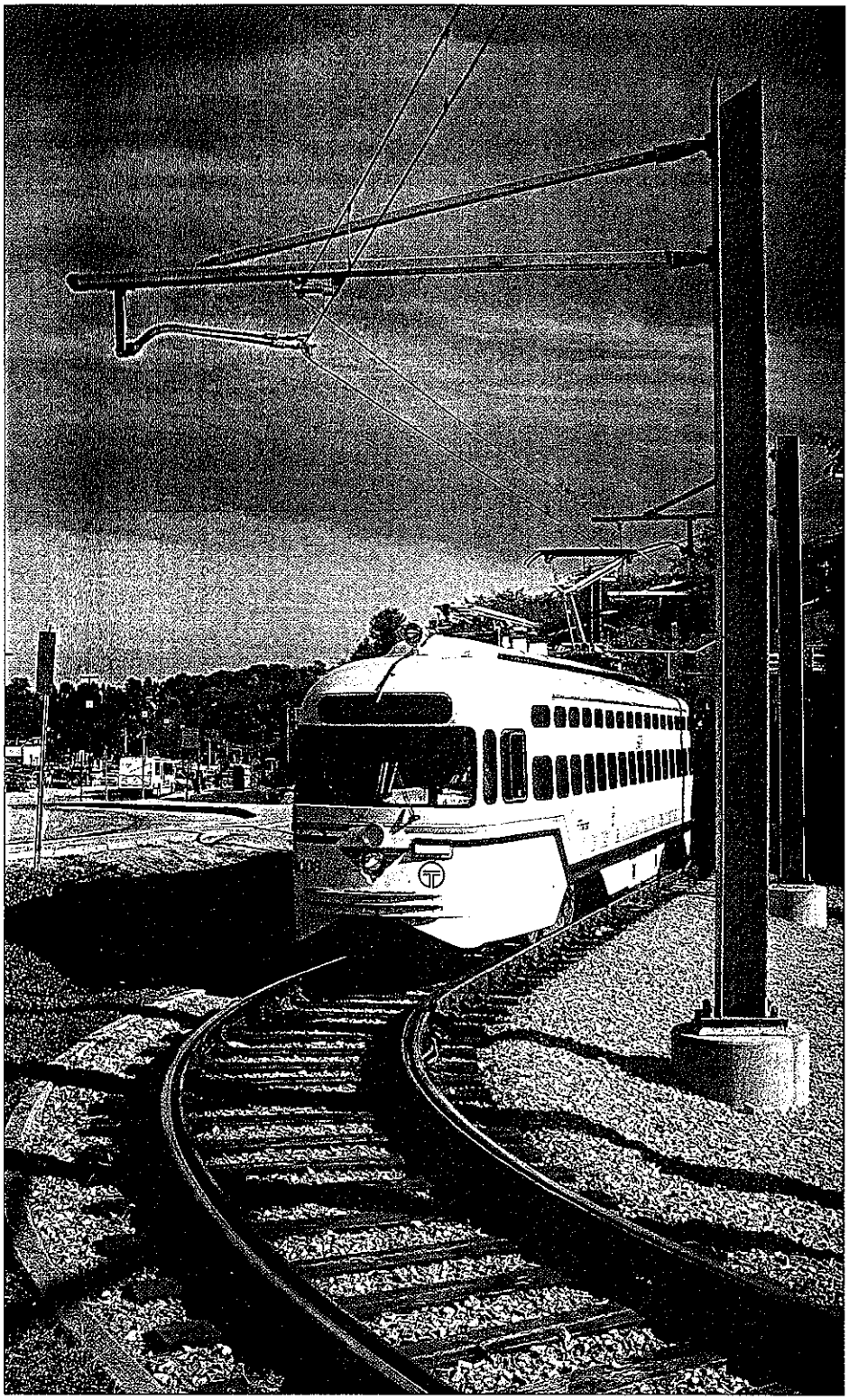
The Queen Mary's design characteristics were widely adopted in forthcoming post-war orders, though its forced-air roof ventilation system did little to impress the potential buyers. PRCo apparently was pleased with the experiment, and all-electric cars 1700-1799 came equipped with the new body style and the overhead fan system. Sealed passenger windows were thought to maximise performance of the fans. This arrangement - no match for Pittsburgh's hot, humid summers - remained a part of the cars right to the end of their operation, much to the chagrin of riders and operators alike.

All cars to 1699 came equipped with the ubiquitous B2 trucks (bogies) used by the majority of North American PCCs. B2-B bogies, modified for smoother street operation, rode under 'city' cars 1725-1799. The B3, designed for open or irregular track, was developed through intense TRC experimentation which saw prototype sets tested under several Pittsburgh cars. PRCo ordered cars 1700-1724 with B3 trucks for inter-urban service, and purchased nine additional sets to retrofit a group of 1600 series cars; counting two cars riding on prototype B3s, 11 1600s were so equipped.

Complementary interurban modifications were roof-mounted headlights, large railway-style pilots, emergency kits and air whistles. The cars also featured a catenary-borne FM communication system known as trolley-phone. This and the emergency kits were discontinued in 1953 when PRCo's two inter-

It took a bit of jockeying to line up all three chartered PCCs on Library loop. The nearby LRV crossover track made it possible. *Roger DuPuis*

Auxiliary low-level platforms were built to accommodate PCCs in subway stations and at some surface stops when upgrading for LRVs took place. At Castle Shannon, with its island platform for LRVs, the outbound PCC platform sits astride a drainage ditch on the opposite side of the track. Last-day riders waiting to board 4008 illustrate the rather precarious arrangement. *Roger DuPuis*



No. 4008 glows in the golden rays of a late summer sunset as it heels into Castle Shannon loop on 4 September 1999, with just four hours of PCC service to go. ***Roger DuPuis***

urbans were cut back from their former termini at Charleroi and Washington (Pennsylvania) to Library and Drake, respectively. The heavy steel pilots and roof lights remained on some trams (including 4000 series rebuilds) until their last days.

System decline

Ironically, the years of trusteeship produced a strong, standardised fleet of modern trams operating over a far-flung rail system, which entered the 1950s essentially intact. In an era when bus substitution was high orthodoxy, PRCo's years in receivership were quite unlike the experience of most North American tramways.

With the reorganisation in 1951 came a moderate programme of route rationalisation and the replacement of many light-traffic tram routes by buses. Remaining conventional trams were at last retired, leaving behind an all-PCC fleet.

Declining patronage soon drove the reconstituted PRCo to its nadir, owing partly to reckless competition from a total of more than 30 independent bus operators. Some 50 tram routes were abandoned between the years 1957 and 1967, while portions of the surviving routes disappeared as a result of service mergers.

After several years of litigation, county-operated Port Authority Transit (PAT) succeeded the anaemic PRCo in 1964, charged with a mandate to unify and rationalise public transit services in the region.

The plan succeeded and an integrated, comprehensive bus system was created as a result. PAT eschewed the utility of trams, however, and a wholesale abandonment of routes and cars was summarily effected between 1964 and 1967.

PRCo's conversion programme was very nearly consummated: by the early 1970s, fewer than 100 PCCs (mostly 1600s and 1700s) plied the remaining South Hills routes. The future of these lines was threatened by PAT's interest in replacing them with the experimental Skybus automated transit system.

Tramway turnaround

Almost overnight, Pittsburgh's remaining PCCs gained a miraculous new lease on life. Changes in management personnel and philosophy coincided neatly with the growth of the light rail movement. In those energy-conscious times, electric trams became progressive again. This point was not missed in Pittsburgh, an industrial town anxious for its newly-blue skies in the wake of an infamous history of air pollution.

Between 1972 and 1979, 25 1600 class trams received intensive overhauls and were assigned numbers from scrapped 1700s. A handful of these received trial modifications, including back-up controllers and modernised 'LRV-style' front ends. While not widely applied, such actions confirmed that PAT was thinking ahead to a new era. Rehabilitated PCCs wore bold new colour schemes, one psychedelic specimen catching the admiring eye of the *New York Times*.

PAT soon resolved to create a modern LRT system from the existing tramway. Construction of the Stage I LRT plan commenced during 1980. When the new subway opened in July 1985, 125 years of tram operation on the streets of the 'Golden Triangle' ended with a final PCC fan trip in the small hours of 3 July.

New rolling stock took the form of 55 Siemens/Duewag articulated LRVs, but the PCCs were not dead yet. The Overbrook, Library and Drake lines were retained, their conversion to LRT postponed indefinitely. PAT aimed to rebuild 45 PCCs to service these lines.

Beginning in 1981, 1700-series cars were reborn with virtually new bodies riding on rehabilitated PCC components. Cost-overruns and a scarcity of parts killed the programme with only a small total of 12 cars completed in six years.

(To be continued)

Notes

1. Commonly referred to as PAT since its inception in 1964, the agency recently has rechristened itself with the simpler name 'Port Authority' as part of a marketing plan designed to highlight its 'gold standard' of service.

2. Chicago's surface lines were closed in 1958, with PCC streetcar components cannibalised to construct a large fleet of rapid transit cars. The remnants of Toronto's vast fleet finally succumbed in December 1995, although four cars remain on the system – two as operating historic relics, two others long since converted for rail grinding duties.

Stuttgart – the full loaf

UITP honours Horst Schaffer; How a German motor city has more and better public transport than England's second city. Getting the big - and the small - things right gets people out of cars.

If you were always fed just crumbs and were told that they were 'bread', I guess that you'd get to believe it. If one day you came across a full loaf you might just get a little overwhelmed.

That is what has just happened to me. Like 59 million other subjects of the United Kingdom, I'm used to thinking that what passes for public transport in this country is 'bread'. Every so often I have to escape to somewhere else to remind myself that what we have in the UK is, in fact, 'crumbs'.

Stuttgart in autumn is itself overwhelmed - with yellow - not only the yellow trams and light rail vehicles of the Stuttgart Strassenbahnen company but all the glorious yellows and golds of autumn. Can there be another major city with vineyards in its city centre, less than 400 metres from its main railway station? Can there be another industrial city with so many woods and forests in sight and but a short tram ride from the city centre?

Honour for Horst

The occasion of my visit was the elevation of Horst Schaffer of VBZ, Zurich, to Honorary Chairman of the Light Rail Committee of UITP (International Union of Public Transport) to mark his sterling service as Commission Chairman until earlier this year. Hans Rat, Secretary General of UITP was there to witness the event as was Manfred Bonz of SSB, Horst's predecessor and Tony Depledge, the LRTA's President and a Deputy Chairman of the Light Rail Committee. Raymond Hue, of TCAR, Rouen, the new Chairman of the Light Rail Committee (previously known as 'Commission' - a new and complex structure has been introduced to modernise UITP and develop its workings) presided over the occasion.

Good though it was to see a former colleague elevated to the loftiest heights that Light Rail can bestow, even better was the opportunity to taste "the full loaf" of public transport as used by the citizens of Stuttgart - home of Mercedes-Benz - every day. DB trains, S-bahn regional rapid transit trains, the SBB's extensive light rail stadtbahn system and now, just two traditional tram lines waiting to be upgraded and modernised to full light rail standards. And, of course, not forgetting an extensive system of buses feeding and distributing passengers to and from the S-bahn, light rail and tram lines.

'Just-in-time'

Indeed, witnessing, repeatedly, buses arriving 'just-in-time' to deliver passengers to light rail lines and waiting to take incoming passengers with, effectively, no waiting time at all, from the light rail system is truly impressive - while turning one green with envy. So this is what high quality public transport is actually like - and to think I was expected to believe UK Deputy Prime Minister John Prescott when he said all that was needed was some low floor kneeling buses!

In a city whose prosperity is every bit as founded on the motor car as is that of my home city of Coventry, England and is pretty certainly considerably greater, one cannot but be impressed by the sheer density, frequency and quality of its public transport. Nor by the fact that public transport's modal share increased between 1976 and 1998 while that of the car actually fell.

Getting things right

Stuttgart demonstrates how quality public transport depends on getting a whole myriad of things constantly right, from the big things - like real, seamless, delayless integration of services and modes and fast, comfortable vehicles - to the small things - the route maps on light rail vehicles which show by flashing light which stop is next as well as which direction the train is running and which services each station connects with (there are few stops which do not have connections). And measures such as having real people present and circulating (not stuck behind a glass barrier) at the Hauptbahnhof hub of the transport system proactively helping people who are not sure which tram or light rail line to take or where it departs from. Even the humble bus stop is more than a piece of street clutter in Stuttgart. In Britain the norm is for there to be no service or timetable information at all on bus stops - no indication of the route or timetable and whether a bus will come in five minutes, 30 minutes, a week's time or ever. In Stuttgart the European standard of excellence is well observed - with simple and comprehensive information giving the route, number of minutes to each of the following stops and a comprehensive timetable.

What a pleasure it was to ride in comfort on SSB's comfortable light rail vehicles, elegantly painted in their all yellow livery with soft and reassuring recorded announcement of the next stop, no irritating door-closing warnings, or visually offensive colour schemes to highlight door locations or knobbly pavements to inconvenience the many to help just a few.

Stuttgart v Birmingham

Stuttgart, with its population of some 560,000 makes an interesting and dramatic contrast to much larger Birmingham (population around 1m). Stuttgart has six S-bahn lines with 10-20 minute service frequency, ten light-rail lines and two tram lines (tram and light rail totalling 99 km now and 106 km shortly), not forgetting a myriad of bus routes feeding the mass transit lines. Birmingham - well, it's too embarrassing to make the comparison really. But it does have one light rail line, which might be extended one day and run through the city centre on-street, half a dozen local rail lines and lots of buses.

Stuttgart has its light rail and tram lines underneath the city centre and the fact that only 3% of the total length of its light rail and tramway lines are actually shared on-street is doubtless the key reason why its services - and all their interconnections - are ruthlessly on time. Of course, Birmingham was to have had at least a pale imitation of the Stuttgart underground core as the central 'cross' of the Midland Metro system - two tunnels with easy vertical change between them through which the 16 to 20 Midland Metro lines would have run with no delays due to street congestion. The powers to achieve this, acquired at the cost of several million pounds, were, it is sad to say, voluntarily and unnecessarily relinquished by the county's Passenger Transport Authority in what must have been the shortest-sighted, politically maladroit and ill-advised decision that any such body has ever taken. Britain's second city is now doomed to suffer the consequences for the next century or more as such powers for tunnels in Birmingham can never be won again - not least because the underground 'gaps' have been closed off by new high rise buildings with deep foundations. Of course, if it is only one light rail line which has to proceed on-street through the city centre there will be but little consequences - except for the buses which will be thrown out - but what about the other 15 to 19 light rail lines which Birmingham must have if it is ever to have, even in 25 or 50 years time, the high quality public transport which Stuttgart has today?

Twenty lines or one

Few who know anything about the practicalities of running public transport believe that 15 to 20 light rail lines can be run on-street through the heart of a major city without disastrous results to (a) the speed and time-keeping of that public transport (b) movement of other modes of transport, public and private and freight at street level and (c) the environment and ambience of pedestrianised streets. While one or two, or even three or four tram/light rail lines can positively enliven and humanise a city centre compared with motor traffic, and are the perfect answer for smaller cities, such as Zurich or Coventry, Grenoble or Nottingham, Nantes or Croydon, it is logistical nonsense to attempt to do so in cities of a million or more where serious mass transit moving huge numbers of people in the minimum time possible is the challenge and anything less than almost total success in doing so will just result in people continuing to use cars and, in the long run, businesses relocating to more enlightened and civilised locations.

Depressing UK realities

I returned to the UK with my pro-public transport batteries fully recharged, but they began to run down almost immediately as I listened to news reports suggesting that local councils see workplace parking charges and congestion charges as politically unacceptable unless spending on improved local public transport, which they would finance, happens first. I think they're right, but I fear Government will take little heed. What chance is there of it doing so when, for the first year of the Local Transport Plans, it told local authorities to plan only measures which could be achieved in a short time and cost little and - when it got the resulting submissions - had the brass neck to criticise local authorities for showing little vision!

It is when one knows what can be achieved elsewhere and then sees what, in one's own back-yard is, in reality, not happening that optimism turns to pessimism and stimulation to indignation. It is on such a disillusioned note that, I am afraid, I must finish this, my last contribution of this Second Millennium (by my calculations this 31 December is, quite properly, the end of the Second Millennium as Christ was born in Year Zero and therefore the beginning of Year 2000 will indeed be the start of the Third Millennium).

A Happy New Millennium to you all!

Bob Tarr,
Secretary General

bobtarr@lrta.org

Light rail the key to mobility in **Marseille**

C.J. Wansbeek visits a French city which is experimenting with tramways powered from street level.

Built on steep hills, Marseille is the second city of France, ahead of Lyon, and has been a tramway city since 1876. It is a bustling harbour city, sometimes messy, often unpredictable, and always very Mediterranean. During the summer, the sticky heat reaches unbearable levels. This makes the city dwellers, a cosmopolitan mix of immigrants and native French, rather irritable and noisy.

One feels tension in the air. People advise against visiting certain neighbourhoods, in the western part of the city, where a fast-growing population demands a much better life than the authorities can offer. But, as long as you avoid treading on the wrong shoes, anything goes. Marseille offers much to enjoy. The old port, the grandiose boulevards, such as the Canebière, the sweeping panoramas.

This vibrant city lies on the coast of the Mediterranean, some 200 km west of Nice, Cannes, St. Tropez and the other delicious Rivièra resorts. With a population of one million (1.3 million in the region), Marseille is the capital of the *Département* Bouches-du-Rhône. It is also an industrial city, with the biggest harbour in France. The inner city lies wrapped around the Old Port, now a marina where the rich and the mighty moor their yachts. To the west, the north, and the east, the city has exploded into a vast Californian-style sprawl, in a haphazard, formless manner. In all respects, this is a big city. Walking is not feasible. Biking is impracticable. Car-driving a nerve-consuming waste of energy.

Seventy bus routes (worked by a fleet of 546 buses) and a gradually-shrinking network of trolleybuses, reduced to a mere three routes today, could not adequately cope with transport demand. In 1977 the first standard-gauge, semi-automatic, rubber-tyred metro line was inaugurated, the second metro line entered service in 1984. The two metro lines cross each other at two different points, and the circuitous paths they both follow through central Marseille is proof that this is a hilly city indeed.

Still operational is trolleybus route 54, between Catalans and Saint-Pierre, at which point it links up with the tramway, described below. The second trolleybus route still running in late-1999 is number 80, between Eglise d'Endoume and Gare de la Blancarde; at the latter point it links up with the tram. Third surviving trolleybus route is the 81 between the St. Just metro station and Pharo. Both 80 and 81 run over the Canebière, the most glorious of the city's boulevards, so the visibility of the once-mighty trolleybus network is still high. A fleet of 47 Berliet ER100 operates these routes.

The recent metro system is already more or

less full-grown. Metro line M1 (La Rose-La Timone) has a length of 10.4 km. Metro line M2 (Bougainville-Ste-Marguerite) measures 8.8 km, with both lying in tunnel in the city centre. Tunnel sections have a total length of 15.6 km; the remainder is on viaduct. Chances are slim that the metro network will undergo major extensions. Costs are too high. Moreover, in the outskirts, the population is thinly spread, which rules out more metro lines. Thirty-six four-car trains run on the metro.

Marseille's third urban rail line is the extremely popular 3-km, eight-stop standard-gauge tram line 68. Also known as TW 68 or 'la 68', the tram has a great deal in common with the metro, which is operated by the same company. This is the city's only tram line, which offers a fast link between the safe, residential area of Saint-Pierre and the inner city. The tram line enters the city centre though a 700-metre long tunnel. Between the underground tram terminus at Noailles and the nearby metro station with the same name, there is a connecting underground walkway. At Noailles, passengers enjoy free transfer between metro and tram.

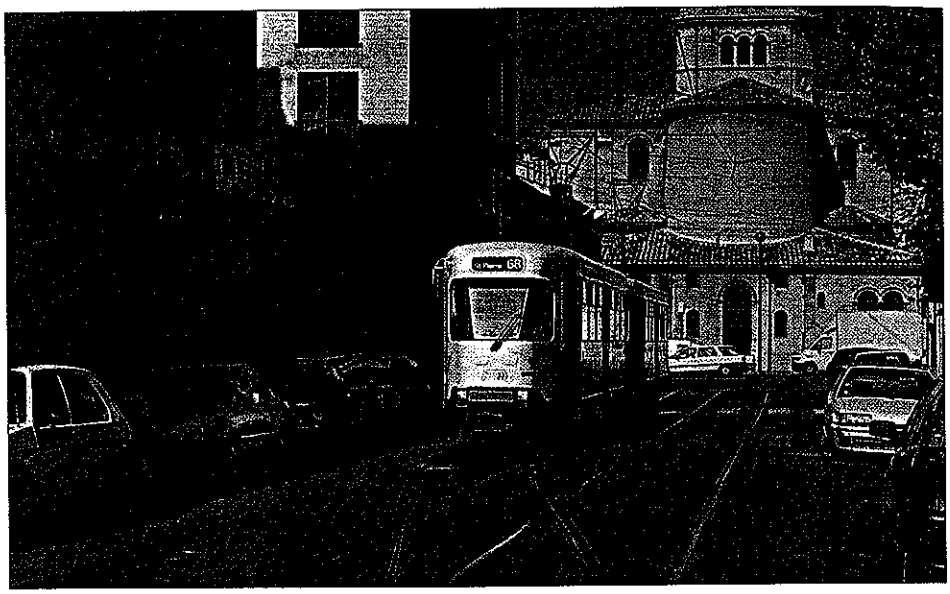
In order to build the Noailles interchange, inaugurated in 1984, a new underground tram stub terminus was created. This has meant a re-laying of the tram tracks at a lower level. This prompted RTM, the transport undertaking, to order three new PCCs (2017-2019), as an addition to the existing PCC fleet (2001-2016), all units built by BN of Bruges, now part of Bombardier. As soon as the three new trams were delivered, RTM replaced the single-car operation by multiple-unit running, with a three-minute service at peaks. One thousand three hundred passengers/day use the 308 tram departures scheduled daily. The 1984-built cars are probably the last 'pure' PCCs ever built in the world.

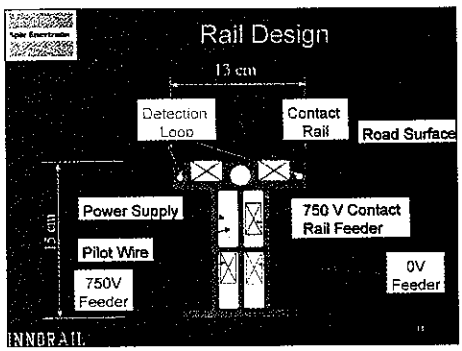
On all official RTM maps, one sees TW68 depicted on an equal footing with M1 and M2, as if the tram line were an integral part of the metro system. This suggests as if Marseille has three, rather than two metro lines. Technically, tram and metro are separated, there is no rail link between tram and metro, and the tram has its own depot, at Saint-Pierre. But tram and metro fares are integrated, and the tram produces the familiar metro-style shrieking tone, as a warning to all when doors close. Acceleration and braking of the trams is very fast, as if it were a metro.

Probably due to problems with safety, all metro and tram services end at 21.00 each evening, and all underground stations are promptly locked. As a replacement, RTM offers a full network of bus lines. In earlier years, metro and trams ran till midnight, and the permanent cutback to 21.00 is resented by many as a *blessure morale* (moral wound).

Despite this restriction, rail traffic is popular. In 1998, line M1 carried 27 million passengers. Line M2 also 27 million. Line TW68 carried 3.7 million. Together, the three rail lines carried 57.9 million. The entire RTM system carried 139 million passengers in 1998. Passengers pay FRF 9 for a single ticket or FRF 25 for a day ticket. Twelve rides within seven days cost FRF 58. Eighteen percent of passengers are daily travellers on the network. Fares income represents 52% of operating and finance costs. The balance of subsidy comes from the city council (with a small contribution from the *département*).

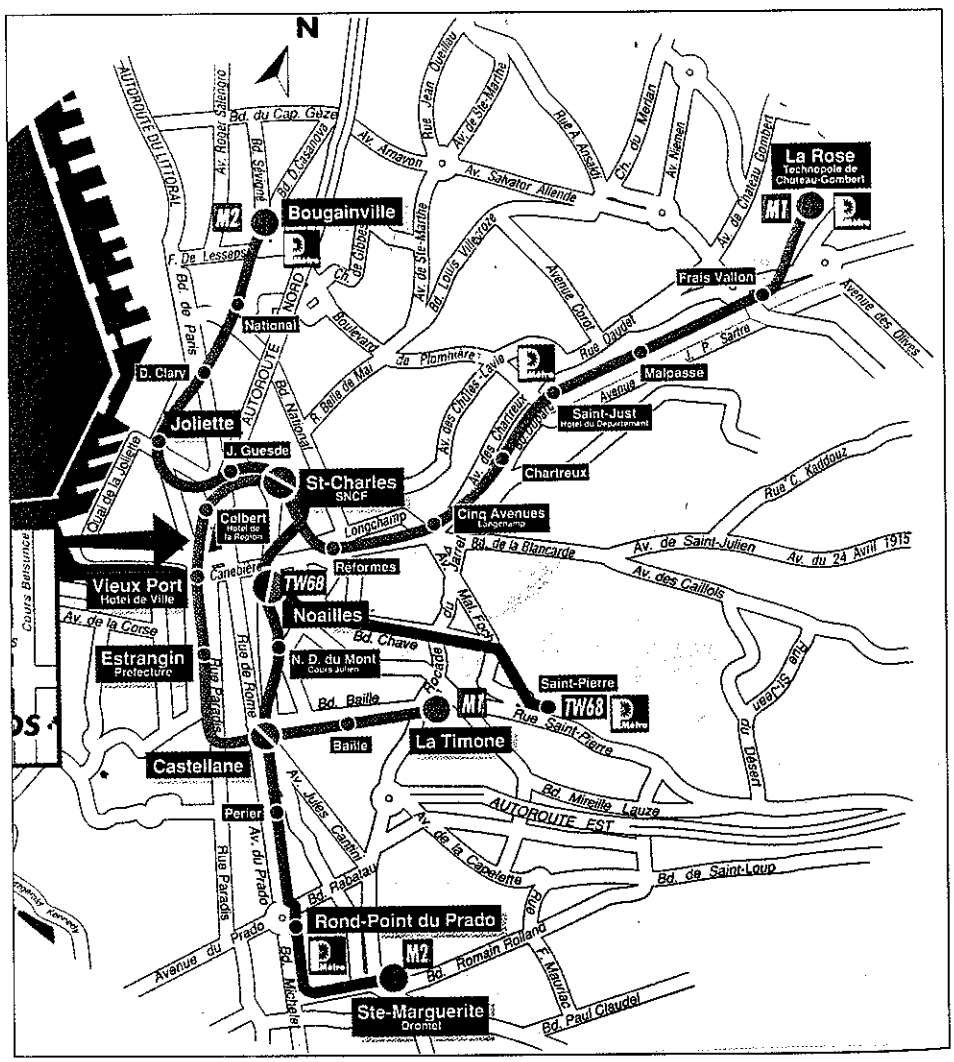
The metros and trams are clean, all underground stations are staffed at all times, as long as services run. All metro stations, underground as well as on elevated sections, are guarded by non-uniformed men, accompanied by large dogs, which spend most of their time near the





Above: Outbound set of coupled PCCs running on street track in Boulevard J. Aicard. The 'boulevard' is a cramped, narrow street, where it will be difficult to create anything looking like a tram reservation in conformity with RTM's intention to create a cross-city express light rail network based on fast tracks on reservation.

Left: The Innorail system proposes a central power rail requiring the excavation of a 200x200 mm trench during construction, to accommodate the power supply under the track.



Marseille tram and metro lines today.

Outbound tram leaving tram stop at Place de la Gare de la Blancarde, seen right is the first section of the experimental third rail, mounted only between the outbound pair of tracks.

turnstiles. These men belong to a private security firm, working under contract for RTM. As the foreign visitor will discover fast, many a station guard speaks a poor French. But the systematic presence of so many guards produces miracles. No graffiti is seen. All escalators function properly. Completely absent are the hordes of drug addicts of the filthy type present at all Amsterdam metro stations. But Marseille is no Amsterdam. RTM will not allow such a degradation of its premises. At Marseille, zero tolerance pays off, and fare-dodging is virtually impossible.

Marseille's transport planners regard their metro and tram lines as a unity, an urban rail network (*réseau ferré urbain*). Admittedly, a rather compact network, says Monsieur Pierre Saracino, of RTM's planning office. Until recently, Monsieur Saracino was managing director of Marseille's metro. He also served a term as a member of the sub-committee on Technical Management of UITP, the international organisation of urban transport undertakings.

As Monsieur Saracino notes, for many years, there were only three tram cities in France, and Marseille was one of them. Of course, 'la 68' was not much in length, in comparison with the one-time 30-route 180-km tramway network which served Marseille in the 1930s. With the return of the tram all over France, Marseille is fast to seek a new role for light rail. So the Marseille city council has decided to build a 25-km network of express tram lines, whereas metro extensions will be minimal.

RTM is a Régie, which in France stands for a public-private company producing industrial products and commercial services. Probably the best-known Régie is RATP, the public transport undertaking of Paris. The RTM Régie is supervised by a Board, with most Board members being representatives of the city. But RTM, which enjoys full operational freedom, is certainly not a part of the state, and RTM employees are not civil servants. They do not enjoy gold-rimmed guarantees of life-long employment. It is usual that the city itself, rather than RTM, takes care of the planning of all major projects.

Unlike RTM, most urban transport undertakings in France are private companies which have been awarded extendible six-year concessions from a regional transport council. This means that many communities grouped around one leading city have a joint public transport undertaking. These private transport companies, often belonging to the same holding company, work closely together when it comes to building new tram lines. This tram *fraternité* has been described for the case of Valenciennes, in our June 1999 report. The *fraternité* helps paving the way for tram line construction in French cities. Monsieur Saracino notes that RTM falls outside such groupings. His Régie is a loner, serving only one city, and the Régie does not belong to any national company. But, no doubt, RTM too wants to move ahead with new light rail fast. So close contacts has been built up with other tram cities in France.

In December 1995, the city council fixed the blueprint, a long-term Strategy for Urban Transport. In November 1997, an elaborated version was approved, with the central aim to create a complete rail network. A few metro extensions are included, M1 from La Rose in the north-east, further to the north-east to Pôle Technologique. Long bus feeder lines are part of the package.

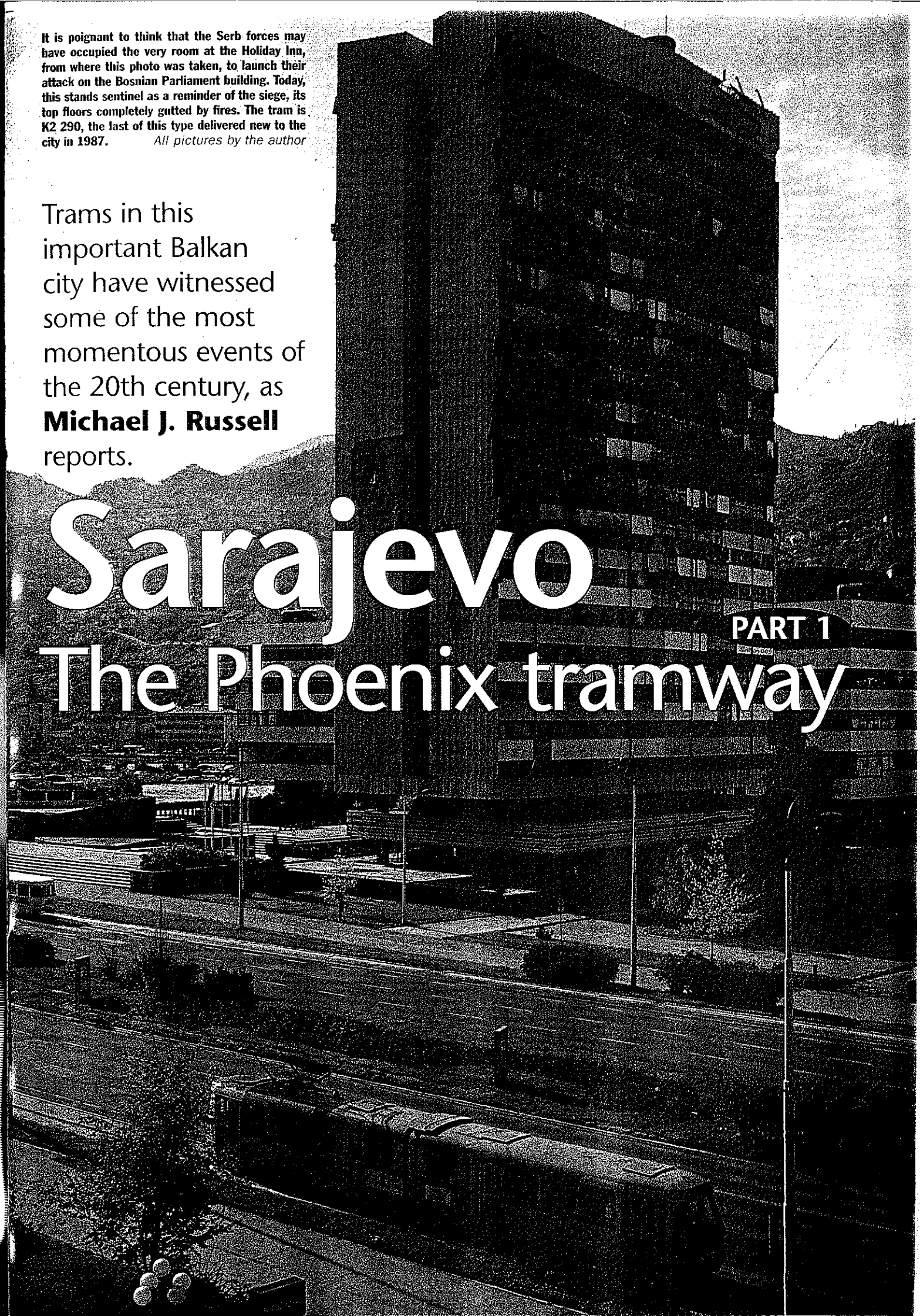
The core of the plan is a total of 25 km of new light rail. The plan is called *Projet de Réseau de Transports Collectifs en Site Propre* (TSCP). The creation of reserved lanes is considered of foremost urgency. On the other hand, unconditional priority for trams at all traffic lights, a feature on which other French tram cities are so keen, is not considered as a top priority by RTM, as part of the TSCP.

Tram passengers will be glad when RTM creates better and safer tram reservations, to replace today's rather primitive stops such as this one at Boulevard Chave.

The plan is now being studied by the state, which is expected to subsidise the scheme. In February 1999, technical studies started. By October 1999, the consultancy and engineering firm for the realisation of the first stage of TSCP will be selected, after a tendering procedure. In 2001, construction work will start, and during the first decade of the next millennium, much light rail construction work will be going on, at several building sites all over the city. The first new light rail lines will be opened to the public in 2003-2004. After that, step-by-step, more light rail lines will be added.

According to Monsieur Saracino, there is a broad consensus for the TCSP. Light rail is what Marseille wants, and the French state seems willing to foot the bill. A long light rail line to St. Antoine railway station in north Marseille may soon see the light. Equally important is a long light rail line from city centre, to the south, to reach Mazargues. At a later stage, this line might be extended further to the west, to reach the coastal line near Pointe Rouge. Several light rail branch lines are planned, one from city centre to the West, to reach the coast line near Quatre Septembre.

But first of all, 68 will be tackled. Plans have



It is poignant to think that the Serb forces may have occupied the very room at the Holiday Inn, from where this photo was taken, to launch their attack on the Bosnian Parliament building. Today, this stands sentinel as a reminder of the siege, its top floors completely gutted by fires. The tram is K2 290, the last of this type delivered new to the city in 1987. *All pictures by the author*

Trams in this important Balkan city have witnessed some of the most momentous events of the 20th century, as **Michael J. Russell** reports.

Sarajevo

PART 1

The Phoenix tramway

now been elaborated to add some 2 km of new street tracks. This will bring route 68 further south from its current underground terminus at Noailles. From Noailles, route 68 will emerge to street level, and run on a long reserved median strip through the core of the inner city, via Rue Colbert and Rue de la République to Place de la Joliette, near the Joliette underground station of line M2. La Joliette is the centre of an urban redevelopment scheme under way in a former docklands area, where new high-rise offices and apartments are under construction. The extension to La Joliette must be operational in 2004. At a later stage, 'la 68' will be extended further north, following the coastal line. So the tram will be the backbone of one of Marseille's most ambitious urban renewal schemes.

The extension of the 68 will have many consequences. The city council has decided that the future trams shall be of a low-floor type, to be selected after an EU-wide tendering procedure. Perhaps 30 new LRVs will be needed, and already now, representatives of European factories have started paying visits to RTM's offices. The current PCC tram fleet, with its width of 2.05 cm, will be replaced by trams with the more conventional width of 2.30 cm.

To this end, the tram tunnel must be widened, and the city of Marseille, in particular the Mayor, calls the upgrading of the tram tunnel a top priority for the whole city of Marseille. There have been rumours that the tunnel might be rebuilt to single-track operation, inspired by the success of the new TSOL line at Lausanne, which proves that with modern signalling systems, very frequent light rail service can reliably take place over stretches of single track.

The strengthening of the role of tram line 68 has triggered plans to extend metro line M1 from its current terminus at La Timone to the SNCF railway station La Blancarde, in the eastern part of the city. This station is already served by the tram. Plans are to renovate the area around the station, and create an interchange facility between train, tram and metro. This will greatly enhance the economic value of this future business district.

Monsieur Saracino notes that at Marseille, metro extensions so far were easy to realise. Most metro extensions occurred underground, almost unnoticed. This will not be the case with the extension of 'la 68', which will be built straight through a few of the busiest arteries of the city.

This explains why Marseille has volunteered to host experiments with a new system to feed the power supply to trams, through a third rail, mounted as a metal strip between the two outer rails. The idea is that this technique might make it possible to do away with overhead wires and poles. This is seen as a welcome improvement to the beauty of an historic city. Already, Bordeaux, which will build a 45-km tramway network, indicated it prefers third-rail operation for inner-city tram tracks. Marseille and Nancy (a trolley-bus operating city) have expressed interest in third-rail feeding, a modern version of the Dolter stud system trialled in the early years of tramway electrification

Since April 1999, field experiments are being conducted by SGTE, a private company, which has mounted a third rail over the 350-metres of tram tracks on reservation (and in cutting, making it invisible to the outside world) of line 68 between the SNCF railway station at La Blancarde and a point near the tram terminus at Saint-Pierre.

The break-through developed by SGTE is that only the segment of the third rail underneath the tram is under tension. The experiments must show whether it is economically and technically feasible to activate the third rail exactly at the points where trams are, in line with the movement over the tracks. The Marseille SGTE third-rail experiments take place after 21.00, when all the regular tram services have closed for the day.

SGTE, which is reluctant to disclose further details, has mounted 15 'control modules', and what one sees is that at intervals of one hundred metres, thick bundles of cables have been laid to connect the third rail with outside power supply. Only one third rail, which looks like a flat rod, shining brightly in the summer sun, has been mounted asymmetrically on the sleepers. The trams have been equipped with special brush contacts, to pick up the 600 v third-rail tension underneath the tram. The challenge of course is to limit the activation of the third rail to short segments of some ten metres, underneath the tram. The third rail serves for the positive tension, the pair of outer rails is for the current return.

Recently, SGTE together with business partner Spie Enertrans created a new joint venture, Innorail, to develop markets for this new product. In the background, there is encouragement from both France Telecom and Electricité de France, one of Europe's leading energy companies (and known for its reliance on atomic energy). The European Commission seems willing to subsidise further research of this innovation.

Elsewhere in Europe, similar experiments are being conducted. This seems to be the case for Matra-Siemens, Bombardier, and Alstom. Bombardier-ANF has been working on third-rail feeding for 20 years. The real pressure to speed up research comes from Bordeaux, which does not wish to waste any more time before starting the building its tramway network. It is understood that Ansaldo of Italy will start third-rail experiments with electric buses at Trieste, beginning in January 2000 (the STREAM system).

The author would like to thank Monsieur Pierre Saracino of RTM, Marseille, for his generous support with the preparation of this article.

Noailles is a double station, one for the metro, one for the tram, and both underground. A coupled pair of PCCs waiting at the underground Noailles tram stub terminus, where since 1984 there is a free interchange (via underground walkways) with the metro line M2.

Quai des Belges, Vieux Port. RTM bus 756, route 83 barré, waiting near Vieux Port metro line M1 stop. Note the freshly-sprayed, clean street. From where picture was taken, it is a three-block walk up the Canebière to the future tracks to be used for the extension of tram route 68.

Above: The first K2 articulated tram to be rebuilt to the Brno pattern arrived at the Alipasin Most depot in spring 1999, renumbered 500.

As this century moves inexorably towards its close, it is appropriate to reflect that the longevity of some electric tramcars in the world's more politically volatile regions has allowed them to bear witness to many momentous events, often spanning the transition from monarchy to republic and/or totalitarian state, sometimes over several decades.

The Balkan city of Sarajevo, capital of Bosnia-Herzegovina, has been in the forefront of world events both at the beginning and end of our century. On 28 June 1914, it witnessed an event - the assassination of the heir to the Hapsburg throne, Archduke Franz Ferdinand - which arguably precipitated the First World War. The country, where eastern and western cultures have met for centuries, had been proud of its tradition of relatively peaceful co-existence between Croats, Serbs and Muslims, with both ethnic and religious tolerance. This was shattered in the last decade of the century, as a result of a declaration of independence following the break-up of the former Yugoslav Federation, when Sarajevo was subjected to siege by the federal army and Serb nationalists, the ferocity of which touched the hearts of people worldwide and the duration of which surpassed by a wide margin that of other sieges in the recent history of mankind.

For almost three years in the early 1990s, the tramways of Sarajevo either lay in a state of almost complete ruination or operated only fitfully. More recently, normality has slowly returned to this beautiful city, set among the hills in a steep-sided valley on the river Miljacka, and the resumption of limited civilian flights has enabled the serious tramway student to set foot there once again. This report is the fruit of a three-day visit at the beginning of May 1999 and reflects the position at that time. Progress towards complete restoration to peace-time conditions is taking place gradually and future visitors should expect to find some further changes by the time they arrive.

The present-day tramway line dates only from 1960 but tramways in Sarajevo have a much longer history, dating back to 1885, when the first horse-drawn tramway was opened, followed later by electrification. The line was built to the normal Austro-Hungarian narrow-gauge of 762 mm (2 ft 6 ins), allowing interchange with the narrow-gauge Bosnian railway, and a three-route system was in operation until the 1950's, connecting the new railway station and the suburb of Dolac-Malta with the old city centre, in the latter area operating via two lines to separate termini a short distance apart. A brief description of the history of this installation appeared in an article by the late J.H. Price in *Modern Tramway* for March, 1961.

After the end of the Second World War, the government decided to develop the land between Sarajevo and Ilidza, a spa village about 9 km west of the city centre, both for residential and industrial purposes. Initially, transport services were provided by motorbuses (including ex-London Transport double-deck Guys and Leylands) but as the vehicles wore out and loadings increased heavily, some better solution became essential. This led to construction of a new high-speed reserved-track standard-gauge (1435 mm) tramway line to Ilidza, the purchase of a large batch of wartime Washington PCC-cars, and the eventual reconstruction of the narrow-gauge routes to the new configuration, at the same time combining the former two separate city centre terminals into one elongated loop worked in the anti-clockwise direction only.

The first section of the standard-gauge tramway was ceremonially opened on 29 November 1960 by President Tito; a temporary city terminus was installed at a specially-built turning-circle at Marindvor (later removed), at the point where the new line met the surviving narrow-gauge line (1) linking the new station with the city centre. This last section of the 762 mm system closed for regauging shortly afterwards and when this section re-opened as the standard-gauge city centre loop, the new tramway was complete. A very frequent service was operated with up to six service numbers providing the various permutations and short-workings. Despite the vicissitudes that have been endured in the meantime, this route network and numbering system survives to the present-day.

Subsequently, 18 Washington PCC's were rebuilt as nine articulated cars, and more modern rolling-stock in the form of Tatra T3 cars arrived. In 1973 delivery was taken of the first ten Tatra **K2** articulated trams. From that time onward, the **K2** became the mainstay of the fleet and a total of 90 had been amassed by 1987, the **T3**s by then being out of service, the last Washington PCC's having been withdrawn in the late 1970s.

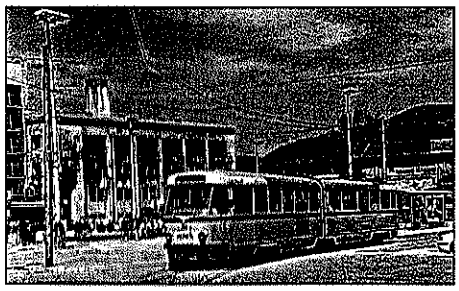
Following the break-up of the Yugoslav Federation and Bosnia's declaration of independence, the city of Sarajevo was initially attacked by Serb forces on 6 April 1992. At that time, tramway services apparently were still in normal operation. By early May, the city was under heavy bombardment from massed weapons manned by the federal army and Serb forces strategically positioned in the surrounding hills; it was claimed that more than 120 mortars, 260 tanks and innumerable rocket-launchers, anti-aircraft guns, snipers and machine guns were ranged against the city.

Fierce fighting took place, and on 2 May 1992, tram services were suspended owing to the deadly situation that prevailed, with risks of injury and death both to staff and passengers. In the four weeks leading up to that cessation, the various civilian services had gradually deteriorated but, as is often the case in the history of cities under duress, the trams were among the last civilian services to stop. The view once again prevailed that, as a potent symbol of a city's lifeblood, at times of extreme adversity, the trams had to be kept running as long as possible and when even they stopped completely, civilisation itself stood at the very abyss.

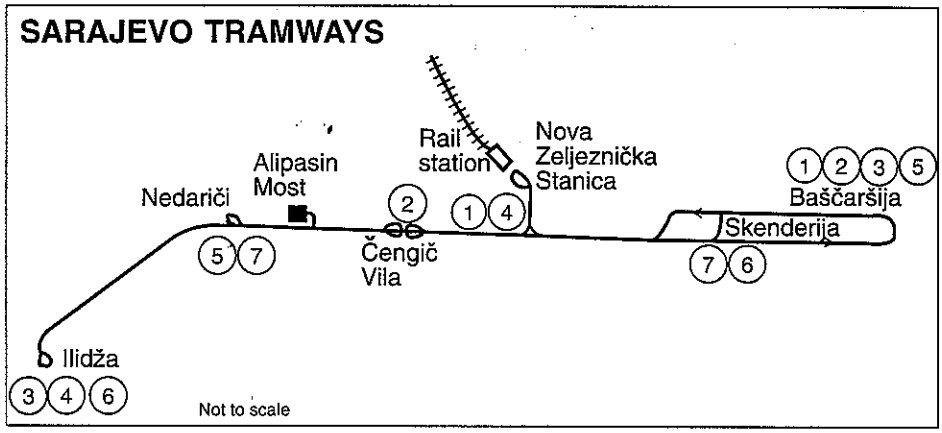
Several cars were abandoned where they stood on the track and many were used as barricades during the siege, sustaining heavy damage. The main dual-carriageway road leading west from

This rear view of 290 shows the traditional rear-mounted pantograph with rope and retriever. In the background is the Sarajevo city hall, built in 1892-94 in the pseudo-Moorish tradition. It contained the national library and archive before it was gutted by shelling. The fabric is undergoing restoration.

A line-up of C+c1 motor+trailer sets, which were once employed in the Austrian capital city of Wien (Vienna), are seen at rest at Alipasin Most depot. Most of them carry advertising liveries. These units are now only used for services between Monday and Friday.



Sarajevo Tatra K2 250 stands at Stanica Nova (new station) terminus, with the badly-damaged railway building behind. Only a very limited train service now calls here and the station building has been transformed into a makeshift home for refugees.



the city towards Ilidza, with the central reservation carrying the tramway, became known throughout the world from war correspondents' reports as *Snipers' Alley* and some news reports included footage of abandoned and wrecked tramcars. The western section of line immediately beyond the last short-working at Nedarici, which included strategically important access to the airport, fell into Serb hands and the front line was only just west of Nedarici short-working facility; it is understood four tramcars were left to act as barricades. The depot, midway between Sarajevo and Ilidza, was subjected to repeated mortar attacks from the surrounding hills and much rolling-stock was destroyed or severely damaged during almost two years of fighting. Firm information about precise damage inflicted on the tramways and their cars is hard to come by, and has to be pieced together from the few media eye-witness reports that covered this subject and subsequent statements by the operator.

By early 1994, the undertaking reckoned that of its entire fleet of 90 trams, only nine were still in anything approaching serviceable condition, though it seems probable that this number were only made good by extensive cannibalisation. Other reports indicate that some 25 or 30 of the total fleet were completely destroyed in the fighting, while a later report increased this total to 44, but the latter figure is now disputed.

Following an horrific mortar attack on the city's central market on 21 February 1994, United Nations commanders gave the Serb insurgents an ultimatum, the result of which was a cease-fire. For the first time in almost two years, those citizens of Sarajevo who had survived the siege were tentatively able to venture out of their homes or bunkers, but with almost all civilian services damaged or destroyed, the scene was one of utter devastation. The civilian and military authorities quickly resolved that a significant gesture was needed to signal both to the long-suffering local population and the world in general that the cease-fire was no mere lull in the fighting but a real prelude to a lasting peace agreement.

It was decided nothing would better illustrate the changed circumstances than to operate a tramcar again. Tracks were quickly patched up by tramway staff and military engineers, war debris and shrapnel removed from lines and overhead wires restored. Much damaged rolling-stock was recovered to the depot and on the morning of 8 March 1994, **K2** tramcar 263, accompanied by another (believed to be 275), rolled hesitantly out of the depot at Alipasin Most for an initial journey to the city centre and back along Vojvode Radomire Putnika (part of *Snipers' Alley*) - the first trams to run in almost two years. Scarcely can a tram's appearance have been so widely publicised, for by that evening its operation had made headline news all over the world and virtually every newspaper carried the story the following day. An engineer commented most businesses were based on rational principles but that tram restoration was based on emotion. The director of the tramways, who had watched powerless as his system was progressively destroyed over two years, commented that the trams were very precious to Sarajevo. "Trams are the blood veins of Sarajevo. For the citizens, trams mean something like normal life," he is quoted as saying in *The Times*.

The unexpected and unheralded appearance of the two tramcars sent out a clear signal of a determination to return to normality. The tram route was apparently thronged by disbelieving locals who, at the sound of the tram's warning gong, emerged to witness an event many thought would never happen. Many readers will be familiar with the movie-film sequences depicting the operation of Leningrad's first tramcar at the end of the siege of that city in 1944 and the sense of relief and jubilation that accompanied it. Press reports indicate that the public mood in Sarajevo at the return of their long-lost friend was equally emotional.

Despite this touching enactment, the tramways were in no fit state to resume regular or complete operation. The last two kilometres of track to Ilidza had been virtually destroyed during the fighting; most of the fleet was unserviceable, war debris littered those tracks that had not been ripped up, and the overhead power lines and substations were badly damaged. The impoverished city had no funds to commence reconstruction and the Mayor, basking in the world-wide publicity that attended the historic journey of 8 March, called for tramway passengers across the world to take 'A Ride for Sarajevo' on what he designated 'World Tram Day' on 21 March. A call went out for the tramways of the world to give an hour's revenue (also variously reported as one route's revenue) on that day to help restore the Sarajevo tramways, a call which went very far from unheeded. Many tramway undertakings in continental Europe gave part of the day's takings and in this country, contributions came from Blackpool, Manchester Metrolink, Sheffield and even the National Tramway Museum at Crich. The financial assistance was invaluable, of course, but equally important was the hand of friendship and solidarity extended by the tramway brotherhood across the world, in so doing acknowledging the importance that restoration of full tramway services should play in returning the city to normal existence.

(To be continued)

Letters may be faxed to 01487 832001 (International +44 1487 832001), or sent by e-mail to hj@howardj.demon.co.uk.

Cleaning up the streets with wall fixings

Further to D.H.T. Smith's letter in your July edition re the use of masts in the centre of Manchester to support overhead lines. This Society has, since its inception, always maintained that for both aesthetic and practical reasons, wherever possible wall hooks (or rosettes on old tram routes) should be used.

We believe that a 'clean' street can considerably add to a pedestrianised area through which some services already run and we hope that new tramways will also follow the hook/rosette method in the future.

William A Brown
Secretary, Aberdeen Tramway Rosette Appreciation Society

A reduction in toxic gases - at what cost?

The news item from Saarbrucken (July issue) demonstrates quite convincingly how CNG (compressed natural gas) engined buses can reduce toxic gas emissions by significant levels.

Unfortunately there was no comparison given for the generation of the largest constituent by volume of exhaust gases - the greenhouse gas, carbon dioxide.

Carbon dioxide is an inevitable product of burning hydrocarbon fuels, and the volume of the gas produced is a function of the design and the size of the engine. The questions which then come to mind are: is the CNG-powered engine as fuel efficient as the traditional diesel engine? Is the reduction in toxic gases being won at the expense of more greenhouse gas?

Ian Souter
by e-mail

The last word on Valenciennes

One point regarding the proposed Valenciennes system (T&UT, June) that may be of interest to readers is that it would appear from the map that part of the route, between Dutemple and Anzin, will occupy the alignment of what was one of the earliest railways in France.

The section between Dutemple and Saint Waast opened in 1838, part of a line from Dinain. This was extended to Anzin in 1842. The line never became part of SNCF, remaining in control of mining interests until its closure, I believe sometime in the 1970s.

Glyn Williams
via e-mail

Loyal contact spanned almost 40 years

It is with regret that these notes come belatedly, as I just now became aware of the sad news of Jack Wyse's death.

It must have been upon the imminent demise of the Grimsby & Immingham Electric Railway, probably in 1961, that I had my first contact with Jack. The result was a reawakening of my, at that time dormant, interest in public transport in general and trams in particular. Jack had always been there to answer questions. He will be sadly missed.

Reiner Zimmermann
Hong Kong

Stagecoach Supertram – what's the serious lack of strategic pla

I found the article by Richard Buckley on Sheffield both useful and interesting. As his article shows, Stagecoach is applying its wide experience to attracting a growing clientele and improving operational efficiency; even before it took over, some of the early deficiencies were corrected.

Moreover, as he points out, the system was built on cost and schedule, and the trams and equipment has proved sound. So why have the results been so poor as to pose a serious threat to acceptance of light rail transit in British cities?

The answer, I would suggest, is a complete failure of strategic planning in developing the tramway. The original concept came from the Sheffield/Rotherham Land Use Transportation Study of the early 1970s (on which my wife and I worked).

Its recommendations identified improved local rail and bus services as the medium term elements for public transport, but included the need to safeguard routes for a segregated public transport system for the medium term.

This was expected to provide a fast high quality service on certain corridors which would by the mid-1980s become subject to severe congestion and pollution; especially that from the new town of Mosborough. Assessment of city transport in other European countries had formed part of the careful sifting of options over the three years of the study.

In the event, the system actually built demonstrated three fundamental differences from the study's concept:

1) far from being fully segregated, the main routes east and west initially included significant sections of on-street running, with no real priorities. Priorities have been introduced over time, but true segregation remains far distant.

2) The final route of the line to Mosborough is significantly different to that in the study report; partly it was shortened at the Mosborough end; mainly because changes were introduced to serve additional areas en route. Both types of change weakened the ability of the line to meet its original concept of a fast service between key centres.

3) There seems to have been an extraordinary chasm between planning for the tramway and planning for land use development, especially housing. Mosborough new town was not complete, and for several of the housing areas which it purports to serve, tramway stops are at isolated points some distance from houses. The Norfolk Park estate on the eastern line has seen refurbishment at lower densities. On the western and Meadowhall lines, a lot of Victorian housing has been cleared rather than refurbished.

All three factors point to lack of strategic understanding among those implementing the original concept. In effect the line was built in circumstances which guaranteed it a clientele well below its capacity, and created uncertainty over its role. This is very visible. On a chartered trip over the line two years ago, as we paused at one of the Halfway line stops at an isolated roadside location, with the nearest houses on a distant hill, one wit was heard to remark: "I didn't know anyone in Europe was still building rural vicinal lines!"

And the line to Meadowhall serves an area of modern industrial 'sheds', as the figures for intermediate stations in Richard Buckley's article bear out: yet, when the Sheffield/Rotherham study office was here, a short distance from the line's current

Stagecoach Supertram is doing good business nowadays. Passengers disembark at the city centre Cathedral stop in the morning peak. *Richard Buckley*

Flights of fancy in the same vein as monorails,

Now and again both the letters and news columns of T&UT carry reports of proposals for novel forms of guided transport as cheaper alternatives to light rail.

Unfortunately, the promoters of these many systems seem never to examine the fate of almost identical proposals put forward and tested in the past. Perusal of the literature of a generation ago, for example, reveals systems which at the time were praised as the solution to traffic problems, but which are now forgotten.

Among the many weird and wonderful proposals were the track-guided private car (the StaRRcar); coupled guided bus-trains for Chicago; monorails in Coventry and a guided hover-bus to Heathrow airport (running on abandoned canals!).

When we add to these the numerous monorails, minirails, carveyors, carlators, sky-rides and telecanapes promoted over the years by companies and individuals, with little, if any success, then we must ask serious questions about any similar suggestions put forward today. It would be a sobering experience to calculate the amount of effort and man-hours wasted in designing, building and evaluating these many systems before they were written off as unfeasible.

Several of your recent correspondents have inferred that

s wrong is nning

alignment, we benefited from the shops, cafes and pubs serving a heavily built-up area.

Contrast this with Grenoble Line A, where from Grande Place at the original south east terminus you can see a line of high rise development stretching to the city centre. Or the Utrecht Sneltram through Neuwegein/Ijsselstein new town, running through a series of high density housing areas, with the stops mostly located at key nodes, some with local shops and facilities.

This is all highly relevant to the two key questions facing our Government and every city and conurbation: how to meet the demand for another four million houses without significant infringement on greenfield land; and how to provide quality local and regional travel for everyone without congestion and pollution.

There is a new and valued awareness: the Transport White Paper last year identified the value of developing housing along public transport corridors, and the recent consultative Planning Policy Guidance (PPG) note on housing developed this. But bringing these principles into play requires strategic thinking among a whole population of professionals and politicians responsible for city planning or involved in it. With due respect to the many excellent people in question, there is a huge cultural gap here in the 'joined-up thinking' which Government is trying to engender; closing that gap will take time unless we put serious resources into it.

Reg Harman
Hereford

hoverbuses

the quality of ride on a rubber-tyred vehicle is as good as rail. The problem of cornering has not been mentioned. As a regular bus user, I know very well the unsettling experience when a double-decker bus corners at 30mph and the passengers have to hold tight or be thrown onto the floor. I have never had this happen to me on any modern tramway.

Nigel Pennick
Cambridge

In defence of civil engineers

I really cannot let Bob Tarr's remarks about civil engineers go unanswered. He accuses us of being the bogeymen on his favourite topic of overhead pole support vs wall fixings.

Let's be specific: The overhead in Croydon was not designed by civil engineers, nor were they responsible for negotiations with building owners for fixings. The reality of the situation is that over a large part of the route the adjacent buildings are too low in relation to their distance from the wire: life would have been easier if all the supports had been from buildings - we wouldn't have had to worry about complex foundations!

Yes, we all like centre poles if we must have them, but when you're dealing with an existing railway corridor you find they take up more width because tracks have to be further apart. You have to widen embankments and cuttings and it costs a lot more than masts at the edge of the side slope.

No, civil engineers are not blind to aesthetics, but neither are they blind to value for money. If there is a problem, it is financial - do not forget that before the concession for Croydon was finalised tens of millions of pounds had to be knocked off the lowest tenderers price or no Tramlink, said the Government.

Croydon council has approved all aspects of the Tramlink design - possibly with reluctance, so one presumes that they believe the eventual OHLE design to be an acceptable, if utilitarian outcome, leaving finance available for other aspects. Be aware that several million pounds are allocated to planting and landscaping, so money is available for aesthetic cum environmental considerations.

What you are up against, Mr Tarr, is not arrogance in the private sector, merely one of the home truths about private finance initiatives or whatever the latest buzz word for it is. You get what you pay for and costs will be cut wherever the specifier has left an opening.

As a designer (not with Tramlink), my job is to give my immediate client the most economic design that meets the system specification - and even that is too expensive to make him happy.

Dick Scurfield
Croydon

Routemasters will be missed

The letters (October) extolling the virtues of London's Routemaster buses are the antithesis of the acrimony expressed in 1950s editions of *Modern Tramway* against these buses when they were introduced. MT was full of articles and letters about 'Busmaster' tramcars.

Nevertheless, this Londoner fully agrees with Routemaster supporters and it will be a sorry day when they finally leave streets of London (and Reading). A ride on one (or the older RT) demonstrates that, from the point of view of the standing and/or semi-disabled passenger (like me), bus design has gone backwards with soft suspension, few downstairs seats, inconvenient handholds, and doors far away from the vision of the driver. At a risk of being labelled anti-progress, I was also pleasantly reminded of the smoothness and comfort of PCC trams (European variants) when I rode these recently in Antwerp and Ghent. Not all new tramcars are as smooth.

However, to return to the matter of open exits from passenger vehicles and the safety of passengers, the Health & Safety Executive appear to countenance the opposite with respect to the Southend pier tramway carriages. These appear to have no emergency doors, and the only passenger exit appears to be through pneumatic doors operated by the guard. In the event of a rare, but not unknown event of the pier collapsing, would passengers be able to exit or would they be sealed in the carriages?

R Gee
Sidcup, Kent

! Please write - but please be brief!

Refreshing attitude of city newspaper

What a refreshing change to read that the media is taking a pro-active approach to improving public transport instead of always taking the easy way and backing the motorist.

I refer to the campaign in the *Manchester Evening News*, putting its weight behind full-scale extensions to Metrolink.

While Deputy Prime Minister John Prescott is quite rightly in the firing line, it would be remarkable to read in perhaps six months' time that he has managed to persuade the Treasury to relax its stranglehold on public funds for Metrolink. For our community, there are few projects more deserving of success.

H.K. Witheridge
Ormskirk

Good looking wires in Germany

In your most interesting article 'Good looking overhead wires', David Hartland seems to make out that tapered posts do not exist. Here in Germany, there are many lampposts made of a tapered tube, bent over at the top in a graceful curve to make a one-piece lamp standard.

No doubt the same system could be used for tramway overhead. Railway overhead standards here are often of tapered latticework, especially those used to hold wires over multi-track layouts. The catenary wires themselves are then held by span-wires, the whole giving a much lighter effect than the British rolled steel joist system, which is no doubt much cheaper post for post. It would be interesting to see cost comparisons.

Timothy C.E. Drane
Hagen, Germany

Negative press does little for Croydon

It was heartening to read in the last issue of the *Manchester Evening News'* support for Metrolink.

Down here in the south, the *Croydon Advertiser* supported a 'Stop Tramlink' campaign and since then has been less than positive.

However, as London boroughs increasingly show interest in supporting light rail and Underground extensions, perhaps the *London Evening Standard* and its daytime cousin the aptly named *Metro* could be persuaded that such developments are good for London and its readers. Light rail could feature strongly in the forthcoming campaign for post of London Mayor, if the London press run with the idea.

Both West Midlands and the Manchester examples demonstrates that civic pride extends to the populace as well as town hall. Tramways were the product of civic pride one hundred years ago. Let us hope that with press support British cities are about to repeat history.

B.C. Coward
Crowborough, Sussex

Early demise of tramways

May I add further reasons for the early demise of some tramways? (November issue).

1. Small towns were spurred on by civic pride to build tramways which proved unprofitable.
2. Narrow streets in town centres only allowed single-line working, a disadvantage when the same thoroughfares permitted buses in both directions.
3. Many councils believed that single-line construction with passing loops would be adequate, not anticipating the future enormous growth in patronage. The 22-mile long tramway linking Pontypridd with Maerdy in South Wales was an excellent example, with only a few short sections in double track.
4. Mining subsidence meant expensive track repairs, together with a catastrophic drop in receipts following the General Strike and years of depression caused that system to be scrapped.

Peter Clark
Liverpool

The Tramways of the West Midlands

By W.H. Bett and J.C. Gillham. Edited by R.J.S. Wiseman. 74 pages, A5 art paper with colour card covers. 16 system maps and 63 photos (plus four colour photos and colour cover). Published by the Light Rail Transit Association at £6 (£6.50 post paid), from LRTA Publications, 13A The Precinct, Broxbourne, EN10 7HY. ISBN 0 948106 23 9.

The latest offering in the Networks Handbook series covers all West Midlands tram operators from Stoke-on-Trent south to Coventry but naturally concentrates on the history of the Birmingham and Black Country networks. The series is derived from the Great British Tramway Networks publication and follows the same A5 format, which does have its limitations particularly when related to reproduction of R.A. Smith's superb maps.

Each system and operator has its own historical overview, including the more esoteric lines (e.g. Birmingham Airport Maglev) and tramways authorised but never constructed. It will take some concentration to fathom out the intricacies of company operation in the pre-Corporation period in Birmingham and even more for the BET-inspired network in the Black Country, although much thicker histories already published give more detail. Midland Metro ownership is simple by comparison; a pity that for such a recent event the incorrect official opening date is given.

Historic photographic coverage is extensive and well reproduced, and a fair proportion of the views will be new to most readers. The book concludes with 15 pages of detailed fleet lists, which seem remarkably complete.

If you've visited Midland Metro and want to put it in an historical context this book is an excellent introduction. Recommended. **JRS.**

Video: Trams in North Lancashire

87 minutes, mainly black and white. Published by Online Video, Manchester Tramway Museum Society, 25 Branch Road, Lower Darwen, Darwen, BB3 0PQ. Price £19.95 including postage.

An exciting find of film, taken by Blackburn photographers Mitchell and Kenyon, has been put together in an evocative programme, interspersed with all other known film of the lesser-known tramway towns of North Lancashire. Clearly the most historic is film from the turn of the century, including electric cars on test in Blackburn and Darwen and a long sequence covering the 1907 opening of the Accrington electric system.

There is wide coverage, from horse cars on Morecambe promenade through new cars on a very incomplete-looking Lytham system, Colne and Nelson, and the Burnley closure. Other systems featured include Blackpool, Southport and Preston. Even where no contemporary footage is known to exist, such as Barrow-in-Furness, there is a reminder that sections of track existed in recent years.

An interesting and unique glimpse of times past, well up to normal On-Line standards. Recommended. **JRS.**

Video: 60 Years of Philadelphia Trolleys

87 minutes, mainly colour. Published by On-Line Video in conjunction with GPS Video. Available from Online Video, Little Martins, Ox Lane, Tenterden, Kent TN30 6NQ. Price £16.00 including postage.

The fascinating Philadelphia urban trolley system is admirably covered in this compilation video, taken mainly from films by Jim Richards. It neatly encapsulates virtually the whole PCC era, and other car types and lines which only briefly survived into the post-war and 'National City Lines' eras.

If you want the Philadelphia Suburban or Red Arrow divisions you will not find them here, and there is only passing reference to rapid transit and trolleybus networks. The strength of the video is its concentration on the detail of the urban network, plus the separate Fairmount Park trolley. Car types illustrated include Hogs, Nearsides and Birneys as well as the ubiquitous PCC, in original and many second-hand guises. Lines described range from short one-car shuttles to lengthy cross-town routes in parallel streets, plus subway routes currently operated and fascinating no-hopers through woods and swamps. Track conditions near the end on some lines clearly facilitated passenger acceptance of replacement buses!

Modern Kawasaki cars may be scarce, but a Blackpool boat features in one of many heritage operations. Well filmed and researched for maximum enjoyment. **JRS**

Edinburgh's Transport, The Corporation Years

By D.L.G. Hunter. 192 pages, 235 x 155mm, limp covers. 153 illustrations and one map. Published by Adam Gordon, Priory Cottage, Chetwode, Nr. Buckingham, Bucks. MK18 4LB. Price £20, £22 including post and packing. ISBN 1 874422 23 0.

The late author's *Edinburgh's Transport*, first published by Advertiser Press in 1964, traced development of city tramways, suburban railways and motor bus services up to 1957. The present volume, edited by A.W. Brotchie, covers corporation services from electrification of cable tramways in 1922 to the formation of Lothian Regional Transport in 1975. During that time, tramlines were extended out to serve new housing. Further extensions were halted by the war, and a change in policy, saw the destruction of a modern, profitable, electric system in a little over four years.

Although tramway chapters are essentially a reprint of the original volume, there is much additional material covering conversion from cable to electric traction, expansion and contraction. A bus chapter takes the story forward to 1975, and there are references to proposed modern tramways. There is a wide range of photographs especially of rolling stock, enhanced by a striking cover of car 69 climbing The Mound. Appendices give full details of rolling stock, buses and trams, the corporation continuing to modernise almost to the end. A fitting tribute to a fine tramway system. **RJSW**

WORLDWIDE REVIEW

ARGENTINA

BUENOS AIRES. 16 five-car metro trains have been ordered from Alstom to re-equip line A. *(RGI*

AUSTRALIA

MELBOURNE. The last tram to run before privatisation was **SW6** 929, on a special tour which returned to Malvern depot at 02.41 on 29 August. At 03.00 all tram operations passed to the new private-sector owners of Swanston Trams and Yarra Trams. *(TA*

AUSTRIA

GRAZ. A new service E has been introduced running every 15 minutes between Jakominiplatz and Hbf between 15.00 and 19.00 on weekdays. The peak run-out is now 59 trams from a fleet of 61. *(EB*

INNSBRUCK. The three years of 'experimental' retention of tram route 6 (Berg Igls) has been sufficiently successful to secure a further three years of operation before another review takes place. *(EB*

SALZBURG. The campaign for more new rolling stock for the Lokalbahn has finally born fruit, and four more articulated cars of the same type as 41-54 have been ordered from Siemens-SGP. Work is in progress on a new interchange at Trimmelkam terminus, which will also serve as an overnight depot, and include a park-and-ride site. *(G. Mackinger*

BELGIUM

ANTWERPEN. The new low-floor trams started to enter service on route 3 from 18 October. PCC 2000 has joined the preserved fleet. *(HOV*

BRUSSEL/BRUXELLES. The allocation of trams to depots during the winter timetable is:

Ave du Roi 7156/8/61/4-7/9-71, 7701/3-9, 7901-43;
Ixelles/Woluwe 2001-51, 7003/6-9/11/2/6/20-2/7/33/5-8/43/5/55/8/74/7-9, 7157/9/ 60/2/3/8, 7500, 7702/10-20/80/1, 7800-27;
Molenbeek 7028/9/ 39/53/ 61/2/4/5/7/71/2, 7752-65/82-99, 7944-61;
Schaerbeek 7721-51/66-79.

Driver training is dealt with by PCCs 7019/42 at Molenbeek and 7060/70 at Schaerbeek. In reserve are PCCs 7004/5/17/ 26/30/1/ 41/52/4/7/76 and 7118/26/9. *(T-2000*

DE LIJN (VVS). 150 low-floor, 25 articulated and 17 standard buses have been ordered from Volvo/Jonckheere for a total of BEF 980 million. Van Hool will supply seven A308 city buses for BEF 43.7 million. *(HOV*

GENT. The first of the rebuilt PCCs, 6214, returned from Germany on 30 September, featuring new doors and seats, a rebuilt (and enclosed) driving cabin, a new roof and new destination indicators. The full De Lijn fleet number appears on a Gent tram for the first time. The tram was displayed at the depot open day on 2 October, together with new articulated tram 6301 (which arrived on 1 October). Both trams saw the introduction of new route blinds. *(T-2000*

BRAZIL

FORTALEZA. Construction has started on the 2.8-km underground section of the metre-gauge metro, which will include three stations beneath Av Tristão Gonçalves in the city centre. *(A. Morrison*

RIO DE JANEIRO. Funds have been secured for the extension of metro line 1 from its present terminus at Cardeal Arcoverde to Rua Siqueira Campos on Copocabana beach. Inauguration is planned for May 2002. An inclined plane railway will open in October 2000 linking the top station of the Corcovado rack line and the foot of the Christ statue overlooking the city. The funicular will spare visitors a 220-step climb. *(A. Morrison*

SALVADOR. Bids are being evaluated for the construction of an 11.9-km automatic metro from Lapa to Pirajá. *(RGI*

BULGARIA

SOFIA. The metro station Opalchenska was opened on 17 September, bringing the length of the line to 7.3 km. The metro carries about 3600 passengers/day. *(M. Kerridge*

CANADA

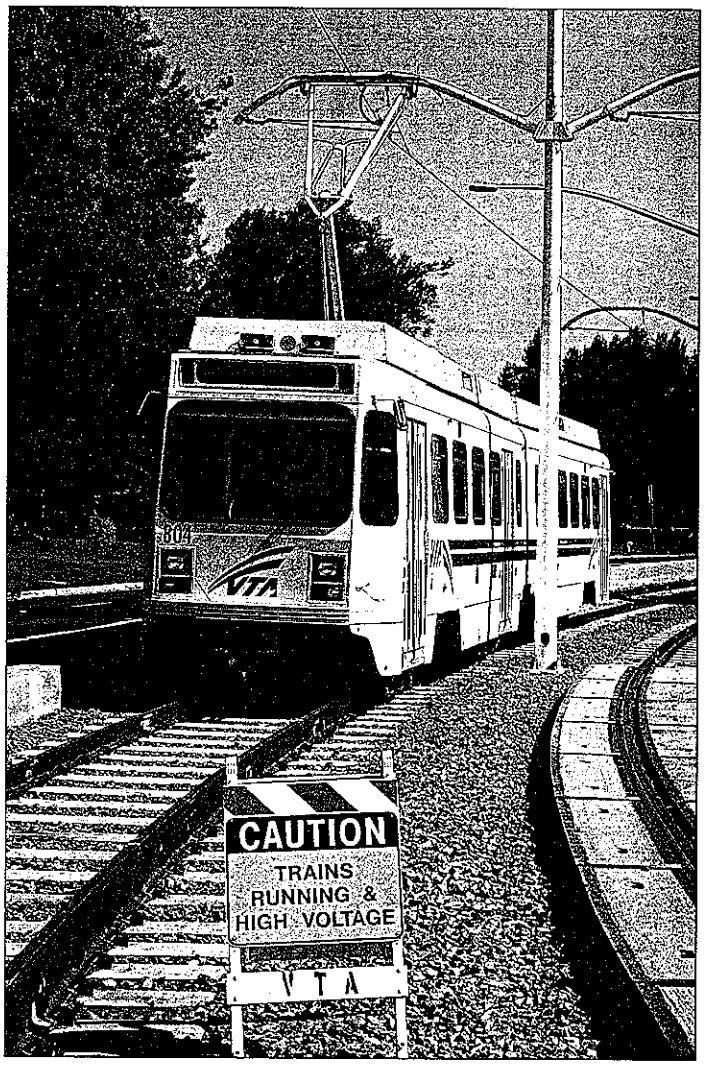
OTTAWA. Work is to start in December on the pilot light rail line using 8-km of CP rail alignment between Lebreton Flats and South Keys. the CAD 16 million project should be opened in summer 2001. *(RGI*

TORONTO. A Toronto Transit Commissioner is leading a drive to keep the agency's last two Red Rocket PCCs. Agency officials want to sell them to a historical association, along with a vintage Peter Witt car, because it is costing about CAD 150 000 a year to maintain and store them. But Commissioner Joe Mihevc says they're valuable relics of the city's culture and history. At a recent TTC meeting he sponsored a successful motion directing TTC staff to look into alternatives that could keep the cars on the property. Mihevc wants to see them used as tourist attractions and possibly rented for charter trips where they could earn enough to pay for their upkeep. Toronto purchased 744 PCCs between 1938 and 1982. Delivery of the first batch of **T-1** metro cars was completed on 2 October with the delivery of 5215. The last of the **M-1** metro cars was removed for scrapping on 8 October: 5300/1 are preserved by the OEHRA museum group. *(J. Wolinsky, R. F. Corley*

CHINA

BEIJING. The extension of metro line 1 from Fuxingmen to Bawangfen was completed for test running on 27 September. *(RGI*

SHANGHAI. The 13.6-km metro line 2 between Long Dong Lu and Jing An was opened for test running from 21 September. A further 2.8 km to Zhong San will be completed by the end of the year. Full passenger service is planned for July 2000. *(RGI*



The first section of San Jose's Tasman-West extension is now being used for test runs prior to opening for public service on 17 December. VTA 1987-built UTDC LRV 804 is seen on Java St at Sunnyvale. *Clark Frazier*

Cityrunner wins Linz contract

The Austrian city of Linz has placed a EUR 45 million order with Bombardier transportation for 21 100% low-floor Cityrunner trams for delivery from autumn 2001. The contract includes an option for a further 18 cars. Linz is the second customer for the Cityrunner design; 18 have been ordered by Graz. Linz will take a 40-m long tram with a total capacity of 242 passengers, to their special track gauge of 900 mm. Electrical equipment will come from ELIN EBG Traction, and the trams will be assembled in Wien-Floridsdorf.

The news come as rumours circulate that the Canadian Bombardier group is about to acquire Siemens' transportation business, including Duewag in Germany and SGP in Austria, a move that could result in widespread rationalisation of excess production capacity in Europe.

CZECH REPUBLIC

PRAHA (PRAGUE). Approval has been given for a 3.6-km tramway extension from Hlubocepy to Barrandov, to be built by 2002 at a cost of CEK 2300 million. *(SV*

FINLAND

HELSINKI. The option for 20 more *Variotram* from ADtranz has been exercised, so the order is increased from 20 to 40. *(J. Rauhala*

FRANCE

CLERMONT-FERRAND. The SMTC has chosen the Renault-Matra *Civis* system (rubber-tyred vehicles with optical guidance) for its second fixed-track system, to link the city centre

and rail station with Chamallieres and Royat. Since *Civis* does not yet exist even in prototype form, for a temporary period the manufacturer will supply gas-powered Renault *Agora* articulated buses with optical guidance. *(TP*

LA ROCHELLE. The City Council has agreed to a FRF 35 million plan by Alstom to build a 1.6-km tramway from its factory at Aytré to Rondpoint de l'Europe in Minimes, to provide a test facility for new tramway products and technology. *(RGI*

GERMANY

AACHEN. The September elections saw the SPD/Green coalition replaced by a CDU/FDP majority, although the previous SPD mayor retained his position in a direct election. However the change could well spell the end for the time being of *Stadtbahn* plans involving diversion of local rail services over city streets by adoption of the Karlsruhe system. *(SV*

BERLIN. The *Senat* has given approval for a 3.2-km tramway to be built between the junction of Karl-Liebknecht-Strasse/Spandauer Strasse and Potsdamer Strasse (Kulturforum), via Getraudenstrasse, Getraudenbrücke and Potsdamer Platz. The DEM 101 million project will start in 2002. A six-month trial of smartcard ticket *(tick.et)* started on 1 October. The remaining **D** class *U-Bahn* trains were withdrawn from service at the end of September; 36 twin sets are now on their way to North Korea. The re-introduction of *S-Bahn* service from Jungfernheide to Westhafen (formerly Pulitzstrasse) is planned for 20 December. *S-Bahn* service is to be extended from Hennigsdorf to Velten by 2003 at a cost of DEM 63 million. *(VB, BS*

BIELEFELD. Plans to open the first section of new route 4 in December have been cancelled and no service is likely to start until April. *(BS*

BREMEN. BSAG has produced its plans for the 5.6-km extension of route 4 from Borgfeld to Lilienthal. If authority for the work to proceed comes through in 2000, completion will be possible in 2004.

DORTMUND. Early November was to see service with *Stadtbahn-B* cars extended from Fredenbaum to Brechten with route U49 replacing route U45. Service beyond Brechten to Brambauer is provided by buses for about 18 months while the single-track section is upgraded to take the high-floor cars. *(DStW*

DÜSSELDORF. Further to our November report, the 6.7-km tram subway between Mecumstrasse (near the University) and Lichtstrasse in Wehrhahn will be built by 2008 at a cost of DEM 1200 million. Unlike the existing subways with their high platforms, this one will be built to be operated by low-floor trams. The new reversing spur for route U75 at Neuss Hbf was brought into use from 28 August. *(SV, BS*

ESSEN. The surface section of route U17 to Margarethenhöhe will be closed for several months from April 2000 to permit five stops to be rebuilt with central high platforms. *(BS*

FRANKFURT-AM-MAIN. 17 September saw the inauguration of the new tram tracks in Kurt-Schumacher-Strasse and the extension of route 12 from Konstablerwache to Hbf. *(BS*

FREIBURG-IM-BREISGAU. The first *Combino* is expected to arrive on 15 January 2000. *('tram'*

GARMISCH-PARTENKIRCHEN. The Zugpitzbahn has acquired ABeh4/4 309 from the Berner–Oberland-Bahn together with two control trailers (211/3) from Bern–Solothurn (RBS). The Swiss stock will be used as a shuttle train on the 10.7-km section between Garmisch-Partenkirchen and Eibsee. *(beo-news*

HALLE. The first section of the new tramway to *S-Bhf* Neustadt is to open on 28 November, with consequent restructuring of the route network. *(HAVAG*

INDUSTRY. ADtranz has confirmed that its rolling stock factory in Berlin-Pankow will be handed over to Stadler Fahrzeuge AG for construction of *RegioShuttle* and GTW lightweight railcars. In the meantime a further 20 class **H** *U-Bahn* cars will be built there for the Berlin system. *(RGI*

KASSEL. Wegmann double-ended articulated tram 312 has been sent to Gorzów in Poland. Two-axle tram 232 and trailer 565 have been scrapped. *(BS*

KÖLN (COLOGNE). The front sections of articulated trams 3865 and 3869 have been combined back-to-back to produce a double-ended works tram 6405 for track scrubbing. *(BS*

MANNHEIM. The extension from Neckarau-West to Rheingoldhalle was opened on 26 September, and is served by route 7 (every second tram outside peak periods). The 10 *Variotram* low-floor cars on order from ADtranz are to be delivered from December 2000, and will be used on routes 1 and 7. *(BS*

MANNHEIM–HEIDELBERG (OEG). The order for 10 new double-ended *Variotram* has now been signed and the 33-m long trams will be 2.4 m wide. *(BS*

MÜNCHEN (MUNICH). With patronage on tram route 17 exceeding 14 000 passengers/day, plans have been announced for a new route 16 to run between Romanplatz and Karlsplatz via Hbf. This will work through with route 12 at Romanplatz. The only remaining class **M** three-axle trams are motors 2658/9 and trailers 3507/12, retained for special duties. *(SV, BS*

NAUMBURG. It is hoped to be able to operate trams between Hbf and Salztor (2.6 km) during 2000; the undertaking is now *Naumburger Strassenbahngesellschaft mbH. (BS*

POTSDAM. Siemens *Combino* trams 405-8 have been delivered; 405 was named Nordhausen. It is hoped to open the new tramway extension to Bornstedter Feld on 4 December. The existing depots in Holzmarktstrasse and Heinrich-Mann-Strasse are to be closed and replaced by the new facility in Babelsberg (Wetzlarer Strasse). *(BS, VB*

WIESBADEN. *Stadtbahn Wiesbaden GmbH* has been founded to take forward the financing and construction of the new light rail line. The company is a wholly-owned subsidiary of *Stadtwerke Wiesbaden AG. (SV*

WUPPERTAL. Upgrading work on the *Schwebebahn* resumed in August, but weekend closures do not now see service resumed until 11.30 on the Monday morning, to permit daylight inspection of work sites. *(BS*

ITALY

MILANO. Service on the 0.6-km Milanino branch, off the Desio interurban in Cusano, ran for the last time on 17 April, the day before the cut-back of interurban service from Via Valtellina, ending the use of 1942-built Stanga cars of series 124-8. The other two interurban lines were, in mid-October, operating as reported. The Desio line starts at Via Palanzone in the Niguarda district, accessible by buses 42 or 83 from Stazione Centrale. The Limbiate line starts on Via Vincenzo da Seregno in the Affori district (bus routes 46 or 52 from Zara metro station). Both routes run daily, but are replaced by buses after 20.00. The off-peak headway is 45 minutes; peak headways vary between 15 and 30 minutes. Whilst the Via Valtellina terminus is not expected to re-open, the Desio service is expected to be re-extended southward to the vicinity of Piazza Maciachini, feeding the new metro there; this will involve track renewal and double-tracking between Via Palanzone and Piazza Maciachini, with work in progress in October. The long-term future of the Limbiate line is still in doubt.

Further to our July report, the urban day ticket (ITL 5000) is a 24-hour ticket, but does not cover the interurban lines or the outer section of route 15. Day tickets (not 24-hr) covering those lines are available, but are sold only at limited outlets, including the ATM office for special tickets (not the general ticket office) at Centrale FS metro station. A day ticket covering the urban area and *interurbano area piccola* (Limbiate line to Ospitaletto, Desio line to Cusano/Milanino) costs ITL 7600. A day ticket for the whole interurban area *(biglietto 1 giorno interurbano area grande)* costs ITL 12 600, good value compared with a single full-distance interurban fare of ITL 5100. *(S. J. Morgan*

ROMA (ATAC). Clarifying our August note, the tram tracks west of Piramide are still used only for depot runs on route 8; route 30 has not resumed operation and no other tram services use those tracks. Route 30 has been eliminated from all publicity, leaving just 30 barrata to Piazzale Ostiense. During 1998 routes 14 and 516 ceased using Via Giolitti outside Stazione Termini and began using parallel Via Amendola, one block to the south-west, where track had existed, but was not regularly used until this change. In mid-October the newest low-floor car under test running was 9127 *(S.J. Morgan*

MALAYSIA

KUALA LUMPUR. The STAR light metro and PUTRA automated metro systems may be merged in order to rationalise costs in response to lower than expected patronage figures. *(IRJ*

NETHERLANDS

AMSTERDAM. The winter timetable from 20 September sees a maximum requirement for 177 trams in Service (Monday morning peak). Ex-Duisburg

Graz 601 is one of 12 articulated trams, built by SGP in 1986, that have recently been extended by the addition of a low-floor centre section. *M. J. Russell*

10-axle trams 1001-3 have been in service on route 5 as Amsterdam 999/8/7 since 12 October. Track has been laid for the future extension of tram routes 6 or 16 along Amstelveenseweg to the University Hospital. The latest dates for completion of the tramways to De Aker (MAP) and Panamaknoop (east harbour) have been given as 28 September 2001 and 2 June 2002 respectively. On 5 October the Dutch parliament agreed to allocate NLG 2100 million for the construction of the 9.5-km north–south metro, but the city of Amsterdam has to add NLG 350 million in the project and carry the risk of any cost over-runs. Work will start later this year for completion in 2007. *(HOV, OR, C. J. Wansbeek*

DEN HAAG. The winter timetable has a peak run-out of 138 trams from the fleet of 147. Route 7 has reverted to its normal terminus at Statenkwartier. Work on the tram tunnel under Grote Marktstraat resumed on 4 October. On 2 October a one-tram protest against the continuing delays was staged by car 3070, which derailed at the junction of Spui and Kalvermarkt and attempted to enter the tunnel via the open workings. Fortunately a traction pole prevented this bid for notoriety. *(OR, HOV*

ROTTERDAM. Four options for a tramway extension from Charlois to Zuidwijk are being evaluated. It is hoped to open the line in 2003. Bids for new rolling stock from Adtranz, Alstom, Bombardier, Consortium Velocity and Siemens are now being evaluated. Tourist route 10 was so successful last summer, that consideration is being given to rebuilding a works tram as a trailer for the year 2000 season. Lengthy negotiations on the RandstadRail project appear to have settled on a tunnel link under Statenweg between the Hofplein line and Centraal Station with Rotterdam-type metro-light rail vehicles taking over this an the Zoetermeer line. At Den Haag they will run through to Scheveningen on the tracks of tram route 1, which will have to be equipped with high-floor platforms. *(HOV, Haagsche Courant*

PORTUGAL

LISBOA. Trams from the *Carris* museum (283, 330, 508, 535 and 802) were running in normal service on 18 September, while the space vacated at the museum depot was used for a celebratory dinner, apparently to mark the 126th birthday of Carris (which seems to have been fixed as the anniversary of the start of construction of the first mule tramway in 1873). Tram 747 and works car 68 have joined the collection. There is no sign yet of route 24 re-opening. *(M. L. Weyell*

SOUTH KOREA

INCHON. The 24.6-km north–south automated metro line from Kyeyang to Tong-mak was opened in October. The 1500 V dc standard-gauge line is worked by 25 Daewoo-built eight-car trains. *(RGI*

SPAIN

BILBAO. The new metre-gauge tramway will be worked by seven three-section articulated cars ordered from CAF for delivery from March 2001. The PTE 3000 million contract includes an element for maintenance. *(RGI*

MADRID. The final 1.9-km outer section of metro line 8, from Aeropuerto de Barajas to Pueblo de Barajas was opened on 8 September. *(RGI*

SWITZERLAND

BASEL. The latest trailer with low-floor centre sections are 1502/3. Of the first series of Swiss Standard trams (401-422), only 419 remains in regular service (on routes 15/16); the remainder are in store for possible sale to eastern Europe. Ex-Zürich trailers 801, 799 and 800 are to become BLT 1301-3. Bus route 37A (Bottmingen–Jakobsberg) has been transferred from BVB to BLT and is now worked by the first Mercedes Cito midi-buses to appear in Switzerland. *('tram'*

BERN. Ex-Zürich snowploughs 1927/29 have become 505/4 in the Bern fleet. Bern is disposing of its works cars 501-3. *('tram'*

BERN–SOLOTHURN (RBS). 19 Be4/8 sets are to be equipped with low-floor centre sections from Stadler. Control trailers 211/3 have been sold to the Zillertalbahn in Germany. *(EA*

LA CHAUX-DE-FONDS–GLOVELIER/TAVANNES (CJ). Former Chur–Arosa cars 487/8 have been acquired from RhB and will be modified for 1500 V dc operation for freight traffic. Gm4/4 508 has been sold to the *Chemin de Fer de Provence* in France. *(EA*

LAUSANNE. Following successful trials with Neoplan low-floor trolleybus 800, 21 more of this type have been ordered. The undertaking has also ordered 16 Van Hool A330 buses with MAN natural gas power. *('tram'*

RHÄTISCHE BAHN (RHB). The 21.5-km cut-off between Klosters and Susch, including the 19.1-km Vereina tunnel, was inaugurated on 19 November, after eight years of work. Three car-carrying trains provide a 20-minute service at times of peak demand, and there is a 30-minute passenger train service *(RGI*

VEVEY–LES PLÉIADES (CEV). BDeh+Bt set 71 + 224 has been heavily rebuilt and refitted to become the Train des Etoiles (train of the stars) with a special silver and blue livery, intended to raise the tourist profile of the line. *(EA*

ZÜRICH. A study is in progress for a tramway link between Escher-Wyss-Platz and Bahnhof Altstetten. The Zoo is hoping to persuade VBZ to extend its terminus tracks by 500 m adjacent to a new entrance

UNITED ARAB EMIRATES

DUBAI–SHARJA. Proposals for an underground metro are to be the subject of a feasibility study. *(RGI*

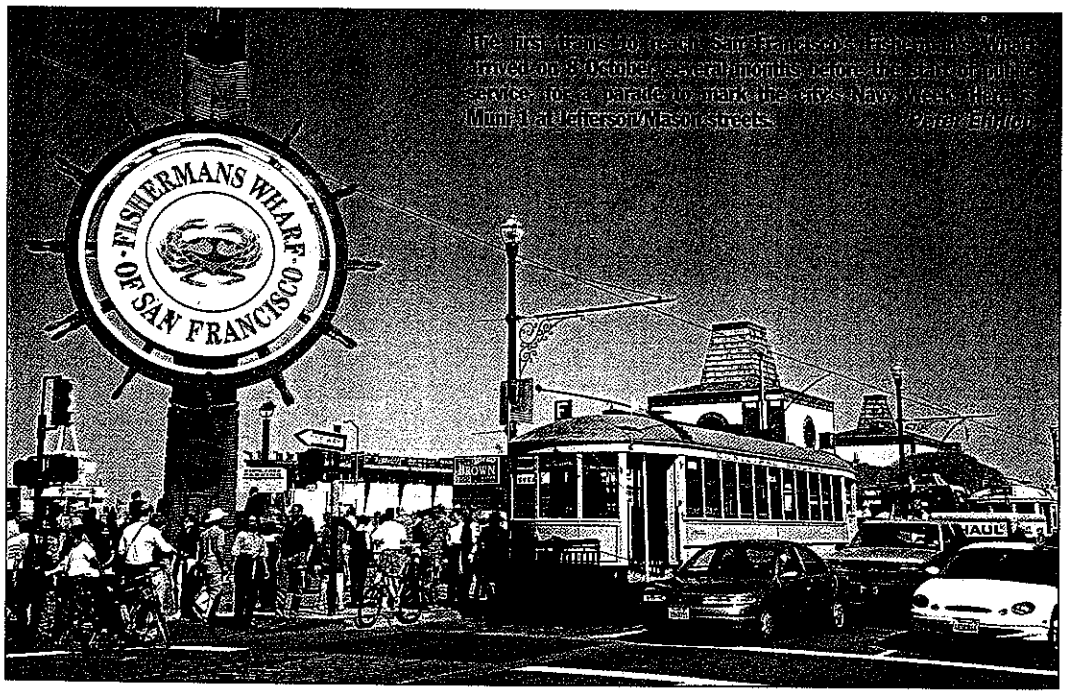
USA

BOSTON, MA. What are being described as numerous quality problems are keeping the MBTA's newest light rail vehicles from entering service in large numbers. The first two of 100 Breda low-floor cars were rolled out with a lot of fanfare in March, four months behind schedule, at which time the agency said 42 would be delivered by 1 September. By early October only 13 were on the property and just five were carrying passengers. Several components are in trouble, including the propulsion system, the fault monitoring system and the auxiliary power supply unit. After giving Breda USD 110 million, the MBTA stopped making payments on the USD 215-million contract and refused to accept any more cars until the reliability of the cars already received is improved. Those vehicles have reportedly required far more maintenance than the Japanese-made Type 7s, although MBTA officials said the problems can be resolved. The Green Line will stay open until 0230 on Friday and Saturday nights from January. The trial program is aimed at the city's many college students and young adults who hit the weekend nightclub scene as well as those who work late shifts. MBTA officials will carefully watch the ridership numbers to determine if the two-hour expansion is worth being made permanent. The first of 11 PCC trams being rebuilt at a cost of USD 3 million by MBTA shop staff for the 4.1-km Mattapan High Speed Line was unveiled during a ceremony at Mattapan on 14 September. The car was in virtually as-new condition, resplendent in the traditional Boston Street Railway (and later MTA) colours of traction orange, cream and silver. There is even a set of cast bronze wings surrounding the headlight. Inside, the colours are a pleasing cream with maroon trim, and stainless steel wainscoting. The step wells and operator's platform, which typically rust out rapidly, are now stainless steel. Unfortunately, the budget would not allow a return to either upholstered seats or resilient wheels. The car underwent substantial structural work and was completely rewired. According to one MBTA official, there's very little of the original car left as the result of successive rebuilds. The Seashore museum contributed quite a bit to the project, including parts and research. Two more PCCs are now at Orient Heights and the rest will soon be rotated through the overhaul program. *(J. Wolinsky*

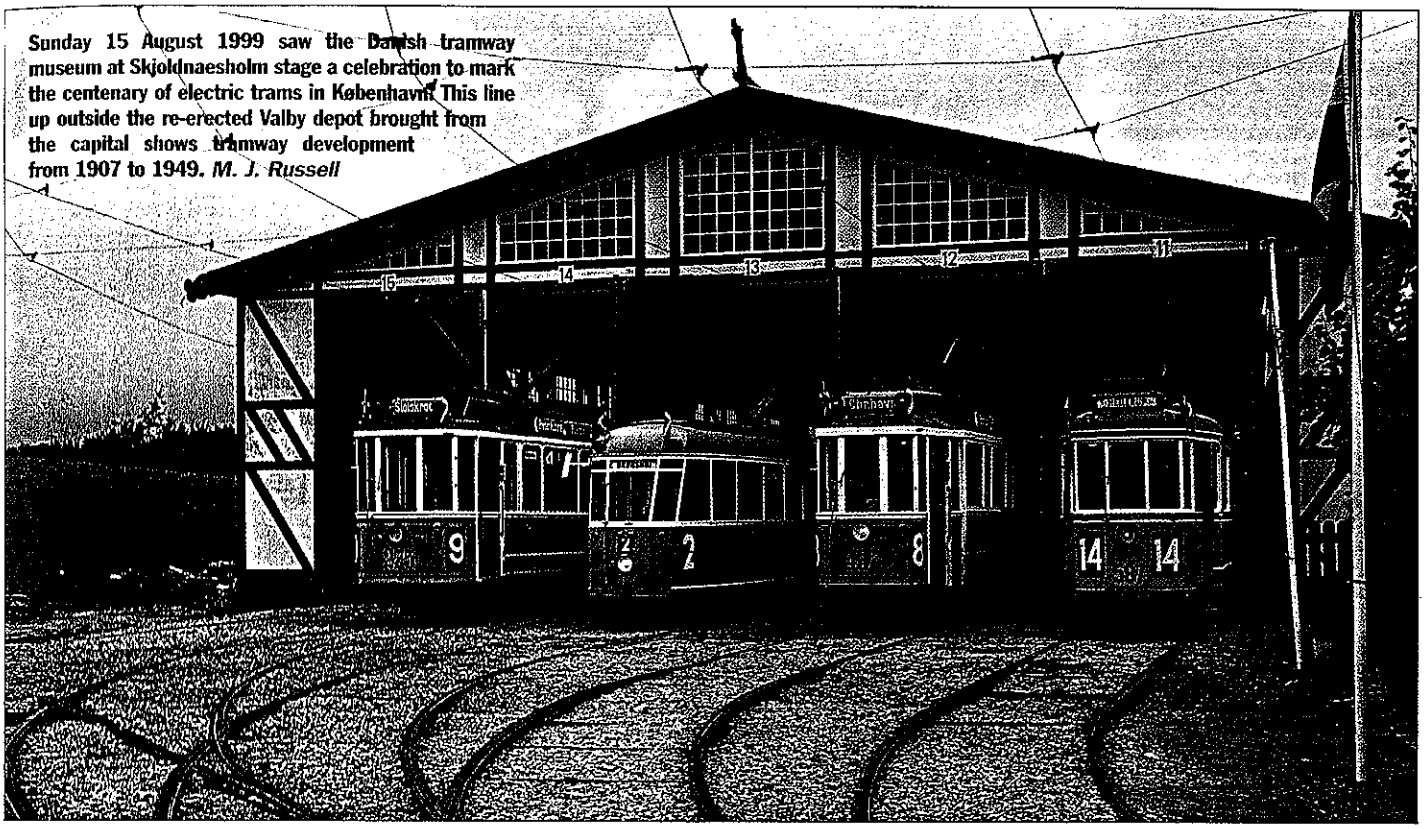
CHICAGO, IL. Alstom has been awarded a USD 54 million follow-on contract to overhaul another 96 of the Chicago Transit Authority's 2600-

Votes for Denver Light Rail

By a margin of 73% to 37%, Denver voters have approved the USD 1700 million bond issue which will permit light rail expansion along the I-25 corridor (34km) including a 7-km branch along I-225. Completion is expected in 2007/8



The first trams for the San Francisco Fisherman's Wharf service arrive on 8 October, several months before the start of public service, for a parade to mark the city's Navy Week. Here, Muni 1-at Jefferson/Mason streets. *Peter Ehrlich*



Sunday 15 August 1999 saw the Danish tramway museum at Skjoldnaesholm stage a celebration to mark the centenary of electric trams in København. This line up outside the re-erected Valby depot brought from the capital shows tramway development from 1907 to 1949. ***M. J. Russell***

series metro cars. This is the first of three options contained in a USD 169 million base contract signed nearly two years ago for refurbishment of 284 cars, 90 of which have already been completed. Alstom reports the work, which is being carried out at the company's plant in Hornell, New York, is currently three months ahead of schedule. Improvements include an upgraded propulsion system, advanced cab signalling, installation of air conditioning and a public address system, and improved lighting. Beginning with the 101st car, two additional items will be added: a vandal shield on the windows and installation of silicone cleats designed to reduce long term wear on high voltage cabling beneath the car. No more than 40 cars are in the program at any one time so as not to disrupt service. Budd/Transit America supplied 598 of the 2600s to the CTA between 1981 and 1987. *(J. Wolinsky*

CLEARWATER, FL. On 13 October the Pinellas County Metropolitan Planning Organisation decided an elevated rail system would be the best option to connect Clearwater with St. Petersburg and area beaches. The agency chose to pursue studies on two possible routes and a loop utilising both corridors, voting to move ahead with preliminary engineering, cost estimates and an environmental impact study that will more closely define the final route and stations and decide on the mode, although LRT appears to hold a decisive edge over a monorail or a people mover. The MPO also identified possible future extensions to Tarpon Springs and the airport. Construction would not start for at least five years. *(J. Wolinsky*

HONOLULU, HI. The city council has announced plans for an electrically-powered 'CityTram' running from Middle St to the University, and along Ala Moana Blvd to the zoo. The project is costed at USD 361 million and should carry 70 000 riders daily. However it is understood that the Ansaldo *Stream* guided bus system may represent what is being considered. *(C. Lietwiler*

HUDSON–BERGEN, NJ. When this new system opens on 1 March 2000, two services will be operated: Exchange Place–34th St (Bayonne) and Exchange Place–West Side Avenue (Jersey City). Delivery of the 29 Kinki Sharyo LRVs was completed in October. *(ERA*

IRVINE, CA. The city council of Irvine, California, has decided to scrap a planned 6.4-km light rail loop circulator and voted instead to contribute more than USD 120 million allocated for the project to the Orange County Transportation Authority for its 45-km north-south LRT system. In exchange, the southern Californian city wants a number of concessions including a promise from OCTA that it will begin building the project in Irvine. The city also wants a spur into the University of California's Irvine campus and a parking structure built at the Irvine Transportation Center. The light rail loop, a demonstration guideway project within the Irvine Business Complex, would have cost up to USD 50 million more than was available from a state bond issue. *(J. Wolinsky*

KENOSHA, WI. The contract for the installation of the overhead wiring was awarded in early October, but contrary to our October note, the substation has still to be ordered. *(S. J. Morgan*

LITTLE ROCK, AR. The Federal Transit Administration has begun reviewing the final design for the River Rail project, a 3-km heritage tramway intended to connect downtown Little Rock with North Little Rock. The once-obscure USD 10.7 million project could be ready to start construction next year if Congress approves the Central Arkansas Transit Authority's request for USD 5 million in funding. The first phase would start at a maintenance facility in North Little Rock, then cross the Main Street Bridge and make a loop through the city centre, making eight stops. Four vehicles would be needed for a 10-minute service and there is speculation that these could be an add-on order to Tampa's contract for eight cars from Gomaco. *(J. Wolinsky*

LONG ISLAND, NY. State transportation officials in Long Island's Nassau County are looking into creating a box-shaped 69-km light rail network. One leg would run north-south parallel to the congested Route 110 corridor while two others would run east-west and connect with another proposed rail transit system serving the Nassau Hub area. That would be a proposed 4.8-km loop connecting the Nassau Coliseum, Roosevelt Field and the Mineola Long Island Rail Road station. The main part of the system would serve LIRR stations at Huntington, Amityville and Freeport. Three overlapping routes would be operated, reducing the need for many transfers. Ironically, part of the route would be on abandoned tramways. It is still a long-term proposal, and detailed studies must be carried out, but the opportunity for light rail appears very promising since no new major roads, or road

The 1999 rebuild of car 12 of the Seaton Tramway has turned it into a passable imitation of what an open-top Feltham might have looked like. It is seen here at Swans Nest shortly after re-entering service in August. ***C. Stannard***

widenings, are planned on Long Island and congestion is expected to increase dramatically over the next 20 years. *(J. Wolinsky*
548 million.

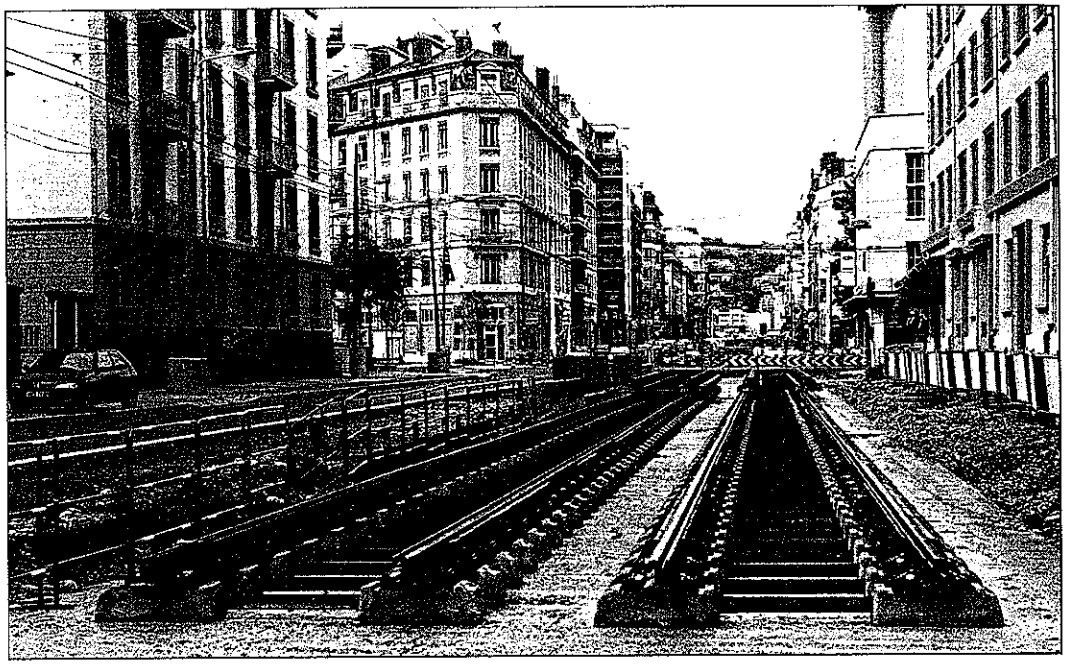
NEWARK, NJ. Fare collection on the City Subway light rail line was changed to the proof-of-payment system from 4 October. There are ticket vending machines and validators at every station, and a USD 1 ticket is valid for two hours of unlimited riding (including transfer to/from NJT buses) within one zone. The LRT line is wholly within one zone. At mid-October the disused trolley poles had still to be removed from the PCCs. *(S. J. Morgan*

NEW ORLEANS, LA. A joint venture of Parsons Brinckerhoff and the New Orleans-based firm C&S Consultants, Inc., has been selected by the Regional Transit Authority to prepare the final design of the Canal Street tram project. This will mark the completion of planning and design efforts prior to construction. Major elements include:

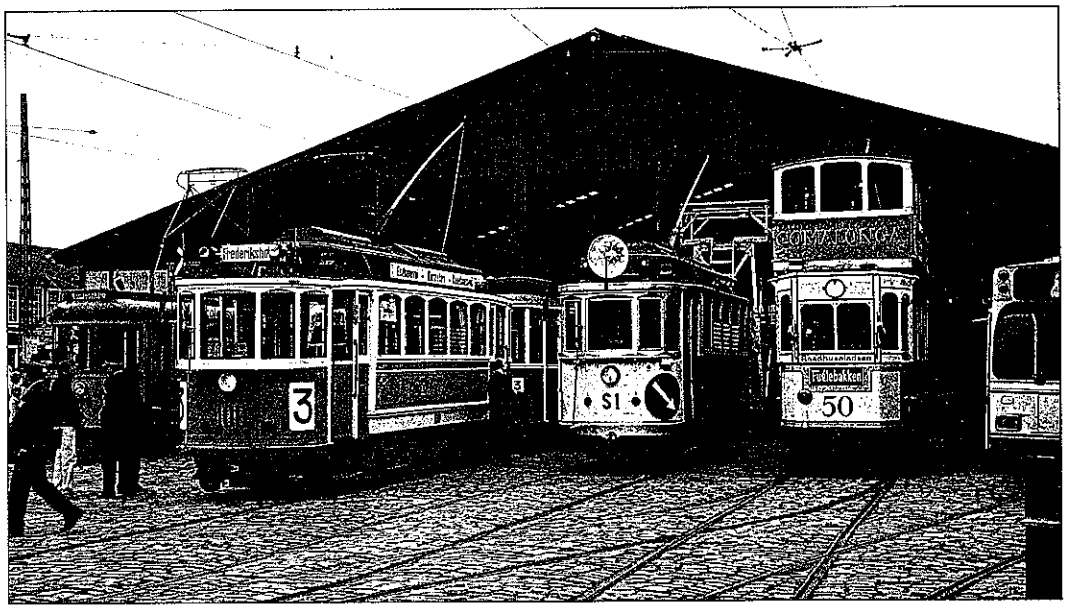
- The Canal Spine – two tracks reoccupying the neutral ground, or median, along the entire 5.63-km length of Canal Street. Trams last ran here in 1963.
- Riverfront Line – improvements at the Esplanade Station for better operational flexibility;
- The Carrollton Spur – a new dual-track branch off of Canal Street at North Carrollton Avenue running approximately 1.6 km to Beauregard Circle on Esplanade Avenue;
- Constructing a new storage, inspection and service building;
- Modifications to the historic Carrollton Barn maintenance facility.

The estimated construction cost is approximately USD 139 million, and the RTA hopes to begin work next year. *(J. Wolinsky*

NEW YORK, NY. The MTA's intensely anticipated five-year transit capital program, released on 29 September, contains more rail construction projects than were completed during the subway building boom of the 1930s. Of the USD 17.500 million that would be spent, USD 10.100 million would be allocated to New York City projects. The largest of these is the routeing of some Long Island Rail Road trains into Grand Central Terminal. Design work at GCT and on the new tunnels that will be required is currently underway with a goal of having the line ready for service in 10 years after an expenditure of USD 1500 million. The LIRR would also get 472 new cars and the Metro-North commuter railway could buy 180 new cars. The city portion of the spending plan includes 1130 new subway cars, the rehabilitation of 64 stations and a start on a truncated version of the long-delayed Second Avenue subway. In addition, USD 645 million would go toward planning and initial construction of a subway connection to La Guardia Airport and USD 75 million would be allocated for planning three projects: extending the 7 Flushing line from Times Square to the Javits Convention Center on the West Side; linking Metro-North to Penn Station; and improving transit downtown. The Second Avenue scheme, however, has already drawn intense criticism from Manhattan elected officials and numerous transit advocates. The MTA wants to build the line south from 125th Street to a junction with the BMT Broadway subway above 57th Street. The Second Avenue trains would then travel along the now-unused Broadway express tracks to lower Manhattan. Critics have already dubbed this version as the 'stubway', demanding instead the tunnels be bored all the way down Second Avenue as originally planned about 50 years ago. Some even suggest that the line be continued over to Brooklyn. They insist the shortened version, which the MTA says is all it can afford, will not relieve horrific rush hour overcrowding on the parallel Lexington Avenue IRT route in the midtown area. According to 1997 figures, that line carried 1.4 million weekday riders — more than 30 percent of the system's daily boardings. Much of the program's financing will come from the state of New York, and that battle has still to be fought in the legislature. *(J. Wolinsky*



Track is under construction for the new tramway system in the French city of Lyon. This is the view in Avenue Berthelot looking towards Perrache. *D. J. Smithies*



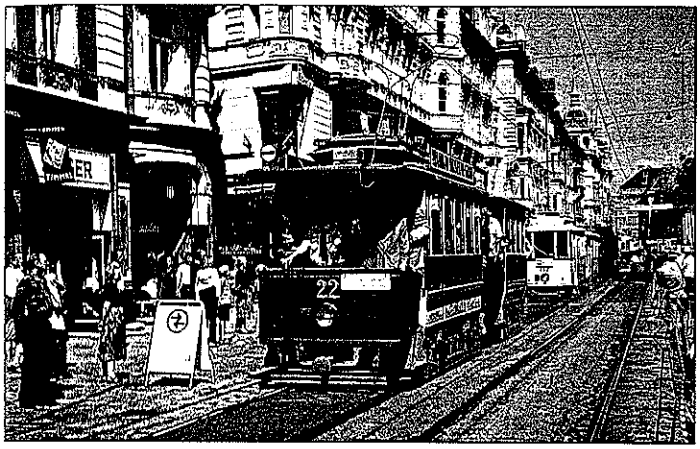
The original museum depot at Skjoldnaesholm features another line-up of København trams, including a former double-decker converted to single deck, a works tram that started life as a double-deck battery tram, and the surviving Frederiksberg double-decker. *M. J. Russell*

PHILADELPHIA, PA (SEPTA). Following completion of bridge replacement, tram route 13 returned to its regular routeing on Chester Ave from 17 October, for the first time since March 1998. *(S. J. Morgan*

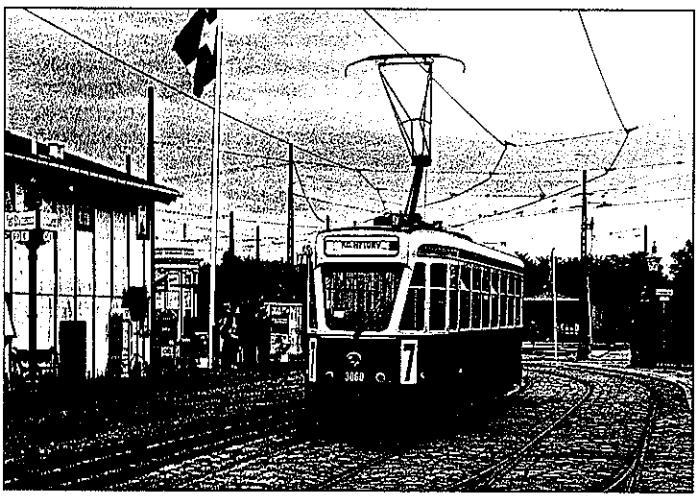
PORTLAND, OR. The first of the six additional Siemens SD660 LRVs ordered in autumn 1997 (248 of series 247-52) was unloaded on 27 October. 247 was due in November after display at the APTA convention in Orlando. About one third of the track for the Central City Streetcar had been laid by mid-October, when erection of traction poles started in Northrup Street. *(S. J. Morgan*

ST. LOUIS, MO. A long-range plan now being studied by consultants for the East-West Gateway Co-ordinating Council would create a new surface light rail loop through central St. Louis, to tie together MetroLink service to the north and south of the city. The tentative route would run one-way counterclockwise along Washington Avenue, 14th, Market and 7th streets. Northbound trains would enter the loop at 14th Street and Washington Avenue while southbound runs would gain access at Market Street, either at 7th or 14th streets. The main transfer point would be at a major station on 14th Street near the Kiel Center station or near the Busch Stadium station on 7th Street. Currently, MetroLink runs through the centre in a former railway right-of-way, including a short tunnel. *(J. Wolinsky*

SALT LAKE CITY, UT. The Saturday free ride program that had been planned for October on a portion of the TRAX light rail line was delayed for at least a month after a car collided with a test train at a level crossing. The previews were designed as a PR move



13 June 1999 saw the electric centenary parade of the Graz tramways, led by museum car 22 of the original 1899 batch of Graz-built trams. *M. J. Russell*



The latest arrival at the Danish tramway museum looks like a Bruxelles PCC, and is in fact Hamburg 3060, demonstrated on København route 7 in 1958, which did spend most of its life as Bruxelles 7000. *M. J. Russell*

Dallas light rail full funding

A USD 333 million Federal full-funding agreement for the extension of the Dallas light rail system to Richardson and Plano was signed on 2 October. The project includes 20 km of light rail construction and the purchase of 55 additional LRVs, and is the first to receive funds awarded under the TEA-21 legislation passed last year, DART hopes to start light rail service to Richardson in mid-2002 and to Plano in mid-2003. Following the success of Dallas' initial light rail line, a locally-funded 17-6-km extension from Mockingbird to Garland is already under construction for completion at the end of 2002.

to generate public enthusiasm for the line prior to its scheduled December opening. An LRV navigated the line through central Salt Lake City under its own power for the first time on 10 September as testing neared completion. *(J. Wolinsky*

SAN FRANCISCO, CA (BART). The Airport extension will receive USD 65 million in Federal funding in the new fiscal year; all but one contract has now been awarded. BART has stopped all older ticket machines from accepting USD 20 notes, after criminals found out how to alter USD 1 and USD 5 notes to be accepted as those for USD 20. *(T. C. Swinney*

SAN FRANCISCO, CA (MUNI). The 8 October event at Fisherman's Wharf was a five-tram parade featuring Muni 1, Blackpool 228, Muni 130, double-ended PCC 1015 and Milano 1556. Works car C-1 provided tow power where overhead had still to be erected. The Peter Witt car remained on static display until 10 October. A kick-off ceremony for the Third St light rail line was held at the Caltrain station on 15 October, although construction is not expected to start until later next year. The last of the first 77 Breda LRVs arrived on 5 October. Delivery will continue of the second batch of 59, and a further 15 have been ordered for delivery in 2003, when the first section of the Third St line will open. New Orleans tram 952 has been damaged in an accident with a school bus, and will be out of service for some weeks. Booz Allen & Hamilton failed to reach their targets for improving reliability on the Muni Metro by the end of September. Although they succeeded in improving cars in service from 72 to 95, and reduced delays from 1234 to 403/month, on-time performance reached 86% rather than the target of 90%. *(Phil Craig, T. C. Swinney*

SAN JOSE, CA. LRVs have begun final testing on the Tasman line prior to its scheduled December opening. Trains are operating between 0600 and 2200 at speeds up to 88.5 km/h. At its 7 October meeting the Santa Clara Valley Transportation Authority authorised amending an existing contract with Parsons Brinckerhoff Quade & Douglas, Inc., by USD 11.7 million for final design services on the Vasona Light Rail Project, bringing the total amount USD 19.6 million. Plans are at the 30 per cent level for civil and structural design and these have been circulated for review. A draft of the Vasona EIS/EIR has been sent to the Federal Transit Administration for review and VTA hopes to hold a public hearing in early December. The line is scheduled to open in early November 2004. The board also heard a report on the Capitol light rail project calling for a joint opening with the Tasman East extension in March 2004. There have also been discussions on merging Tasman East and Capitol since the latter is, in reality, an extension of the former. *(J. Wolinsky*

SEATTLE, WA. Elected officials and civic leaders in the three-county Seattle region have reached an agreement on how to proceed with the planned Central Link light rail line. Their most important decision was to request USD 415 million in state funding from the legislature for the 4.8 km extension north from the University District to Northgate. This ridership-intensive segment was dropped from the original 38.6 km proposal, along with two stations and other facilities, due to increased cost estimates for the project, now about USD 2 billion. But pressure has been coming from all sides to reinstate it because it would attract an estimated 16,500 daily riders, reducing traffic volumes coming into downtown. The city of Seattle and King County also agreed to contribute financially so that the line, from the city of SeaTac to the University District, is completed by 2006. The city of Tukwila has won its battle for the line serve Southcenter, an important redevelopment area, rather than run along Highway 99. The University of Washington has yet to sign an agreement allowing light rail stations on its campus. There are also very vocal protests from Rainier Valley neighbourhood activists demanding that LRVs run underground, at an added cost of USD 600 million, instead of on the surface. But the tunnel proposal was again rejected. Sound Transit has received a guarantee of USD 30 million in federal funds to continue design work.

A draft plan for attracting private sector investors to a proposed rubber-tired monorail transit system has listed three route options. Released in early October by the Elevated Transportation Co., the report describes a north-south line from Lake City to West Seattle by way of Northgate, South Lake Union and downtown plus an east-west option from Sand Point and Laurelhurst through the University District and

terminating at Shilshole. The third suggestion is a short line connecting Pike and Pine Streets downtown with Capitol Hill. Once it receives comments on the draft document, the ETC plans to develop a formal Request for Partnership and distribute it to companies that might be interested in the project. Several firms both with and without monorail experience have shown interest in the project. But none have given the slightest hint that they would be willing to put up the cash needed to build the line as required by an initiative approved by voters two years ago. The full 40-mile system shown on the ballot has been scaled back by the ETC board as being too ambitious and, with an estimated cost of USD 1 billion, too expensive. *(J. Wolinsky, C. Lietwiler*

TAMPA, FL. The Hillsborough Area Regional Transit Authority held public workshops during October and November to gauge public opinion on a proposed rail transit system. The preliminary plan calls for a three-route, 46 km network costing about USD 575 million running from downtown to Tampa International Airport and from the Port of Tampa to the University of South Florida campus. The service would be operated by diesel LRVs and would be integrated with improved bus service. This would be inaddition to the 3.9 km heritage tram line being built from the Convention Center to Ybor City. *(J. Wolinsky*

TRENTON–CAMDEN, NJ. A partial notice to proceed on construction of the new diesel light rail line was issued at the beginning of October. An additional USD 3.8 million study has been commissioned to study a 1.3-km street extension from Trenton station to the State House *('Courier-Post'*

Contributors

News items for this column are always welcome and should be sent to M. R. Taplin, 3 Pine Way, Gloucester GL4 4AE (fax + 44 (0)1452 419900; *e-mail miketap@globalnet.co.uk*).

Topical good-quality photographs, particularly of new lines or rolling stock, are also welcome. Photos with plenty of people in them are very welcome. Original colour slides (dias) are preferred, but prints may be used if they are good quality. Items to be returned should be clearly marked with the sender's name and address, and accompanied by a stamped addressed envelope or IRC.

In addition to the individual contributions, acknowledgement is also due to the various magazines as listed: BS *Blickpunkt Strassenbahn*, CBT *Committee for Better Transit New York Streetcar News*, EA *Eisenbahn Amateur*, EB *Eisenbahn*, FACS *Chemins de Fer Regionaux et Urbains*, HOV *Het Openbaar Vervoer*, IRJ *International Railway Journal*, LT *Lokaltrafikk*, MfSS *Meddelanden från Svenska Spårvägssäll-skapet*, OR *Op de Rails*, PRm *Passenger Rail Management*, PT *Passenger Transport*, RGI *Railway Gazette International*, RS *Regionale Schienen*, SM *Strassenbahn Magazin*, SV *Der Stadtverkehr*, TA *Transit Australia*, TP *Transport Public*, TR *Today's Railways*, TT *Tramway Topics*, TW *Trolley Wire*, T-2000 *Tram 2000*, UTI *Urban Transport International*, VdR *La Vie du Rail.*, VK *Város Közlekedés*, VT *Verkehr und Technik.*

Light Rail Transit Association

NOTICEBOARD

■ The Model Railway Club is staging a railway book fair at Keen House, 4 Calshot Street, Kings' Cross, London, N1 on Saturday 27 November 11.00 hrs and 16.30. Admission is £1, and dealers will include Barry Jones, Ted Hancock and Pat Price Books. For details, call 01753 890849.

■ **The next Festival of Model Tramways, Europe's premier event for the model tram enthusiast, will be at the Museum of Transport, Boyle Street, Cheetham Hill, Manchester on Saturday and Sunday 8 and 9 July 2000. Readers wishing to book stand space should contact Festival Manager John Prentice, 216 Brentwood Road, Romford, Essex, RM1 2RP. Further information on *www.tramways.freeserve.co.uk***

■ If you have a query about membership, subscriptions, or delivery of *T&UT*, please write to the Membership Secretary Michael Lea, 23 Shrublands Close, Chigwell IG7 5EA. Mr Lea is unable to deal with telephone queries. The magazine is usually put into the post around the 21st of each month, but delivery times vary significantly from area to area, which is outside the control of LRTA. New carrier sheets should improve the reliability of overseas deliveries. Send other enquiries to the LRTA head office, PO Box 302, Gloucester GL4 4ZD (tel/fax 01452 419900, e-mail *jantap@dial.pipex.com*). An answer-phone facility is available but not between 22.30-06.00 GMT.

■ **Items for inclusion in this column in the January issue of *T&UT* should reach the Editor-in-Chief by post, fax, or e-mail by Wednesday, 1 December.**

LRTA WEBSITE - *www.lrta.org*

Thanks to Fred Andrews the Leeds page has now been activated with information about the current situation as well as maps showing the proposed routes. Volunteers are still required for the remaining British cities let alone those overseas. Although a knowledge of the web is useful it is not necessary. Visitor numbers continue to grow - making the site a major showcase for the LRTA - help us to keep it up to date. **Brian Lomas Webmaster www.lrta.org**

MEETINGS DIARY

Tuesday 6 December. *Southampton* 19.30 hrs. Martin Petch: Railways of Belgium. (LRTA/SEG event).

Wednesday 8. *London* 19.00 hrs. Scott McIntosh: London developments.

Wednesday 8. *Brighton* 19.30 hrs. Tramchat. (TLRS event).

Friday 10. *Glasgow* 19.30 hrs. Members' slides. (ST&TS event).

Friday 10. *Leeds* 19.30 hrs. A. De Burton: Scandinavian Tramways.

Saturday 11. *Birmingham* 14.00 hrs. Members' slides. (LRTA/TLRS/ERS).

Tuesday 14. *London* 19.00 hrs. Dave Carson: 25 years down the Tube, Lion City railways (Singapore). (LURS).

Tuesday 14. *Reading* 19.30 hrs. TBA. (TMS event).

Wednesday 15. *Bristol* 19.30 hrs. Brian Lomas: 1999 update. Video.

Saturday 18. *Beeston* 14.00 hrs. David Beardsell: San Francisco cable and trolley cars. (TLRS event).

Monday 20. *Sheffield* 19.30 hrs. Roger Benton: TMS archives film show.

Wednesday 22. *Liverpool* 20.00 hrs. Members' slide evening.

Wednesday 12 January 2000. *Crawley* 19.30 hrs. AGM and crossword/ word search. (TLRS event).

Wednesday 12 January. *London* 19.00 hrs. John Laker: Czech tramways. (Video).

Thursday 13. *Swanley* 19.30 hrs. A. Snowdon (Redhill): Germany's longest tram route. Westinghouse Signals offices, Station Approach. Contact: see Kent. (TLRS event).

Friday 14. *Glasgow* 19.30 hrs. Gavin Booth: Buses of the Century. (ST&TS event).

Friday 14. *Leeds* 19.30 hrs. M. Waring: Trams in the Czech Republic.

Saturday 15. *Birmingham* 14.00 hrs. TBA. (LRTA/TLRS/ERS event).

Monday 17. *Sheffield* 19.30 hrs. John Banham: Millennium miscellany.

Wednesday 19. *Bristol* 19.30 hrs. TBA

Thursday 27. *London* 19.00 hrs. A. Holmwood: Mainly Poland - slide show. (TLRS event).

Friday 28. *Leicester* 19.45 hrs. John Lessells: Modern trams around and about. (TMS event).

Saturday 29. *Garstang* 14.00 hrs. Millennium model meeting. (TLRS event).

MEETING PLACES

Beeston Scout HQ, Middle Street, Beeston, Nottingham (TLRS meetings).

Birmingham LRTA: Carrs Lane Church Centre, Carrs Lane, Birmingham (city centre, just off High Street, close to New Street station) All meetings start at 14.00 hrs. (Enquiries to M.V. Ballinger, 36 Seven Acres, Aldridge, Walsall. Tel. 01922 452 384. TLRS meetings: Aston Manor Road Transport Museum, Witton Lane.

Blackpool/Cleveleys Wings Club, Victoria Road West, Cleveleys. (Fylde Tramway Society).

Brentford Kew Bridge Steam Museum, Green Dragon Lane, Brentford. (TLRS meetings).

Brighton London Road Station, Brighton (Alternate months Crawley) Tel. B. Boddy 01273 512839.

Bristol Meetings in members' homes (third Wednesday of the month), usually at 7 Crofton Avenue, Horfield at 19.30 hrs. Enquiries to B. Lomas. Tel: 0117 951 7785.

Crawley Worth Abbey, Turners Hill, Crawley, West Sussex (alternate months, Brighton). Tel 01273 512839

East Anglia Contact John Woods, 89 Welsford Road, Norwich, NR4 6QE. Tel: 01603 507631.

Edinburgh Riddles Court, 322 Lawnmarket, Edinburgh 1. (Enquiries to A.G. Gunn, 41 Ravelston Garden, Edinburgh, EH4 3LF. Tel: 0131 337 4073.)

Garstang St. Thomas' Church Hall, Church Street, Garstang, Preston (TLRS meetings).

Glasgow Kirk Lounge, Renfield Street, Stephens Church Centre, 260 Bath Street, Glasgow. (Scottish Tramway & Transport Society).

Kent & S.E. London TLRS: Meetings at various locations - usually third Thursday. Contact: Martin Pamphilon, St. Michaels, Rectory Gardens, Whitstable, Kent CT5 2LY. Tel. 01227 793405.

Leeds Committee Room 1, Civic Hall, Leeds (Portland Crescent Entrance) Second Friday of month. Enquiries to D.G. Clarke, 8 Winston Mount, Headingley, Leeds LS6 3JY. Tel: 0113 278 7735.

Leicester St. Peter's Church Hall, Wigston Road, Oadby, Leicester. Contact: Robert Bracegirdle. Tel: 0116 270 9654 (home), 01509 233414 (office).

Liverpool LRTA meetings - Ship & Mitre, 122 Dale Street, Liverpool L2.

Fourth Wednesday of month. (Enquiries to P R. Jackson, 101 Thingwall Road, Liverpool L15 7JX. Tel: 0151 722 3005.) TLRS meetings - Green Park Hotel, Greenpark Drive, Sefton Park, Liverpool 17.

London Fred Tallant Hall, 153 Drummond Street, NW1 (near Euston Square and Warren Street Underground stations). LRTA Meetings held second Wednesday of month - enquiries to A.J. Weise, 6 Hermitage Woods Crescent, St. John's, Woking, Surrey, GU21 1UE. Tel: 01483 475525. TLRS meetings held on last Thursday of month - enquiries to G.R.Tribe, 47 Soulbury Road, Leighton Buzzard, LU7 7RW. Tel: 01525 377215. LURS meetings held second Tuesday of month at Conference Room, Baden-Powell House, South Kensington. Contact John Mees, 12 Ashcombe Court, 31 Carlton Drive, Putney, London SW15 2BW. Tel: 0181 789 7862.

Manchester Friends' Meeting House, 6 Mount Street. Meetings last Thursday of month. Enquiries to Tony Williams, 65 Buckfast Road, Sale, Cheshire M33 5GA. Tel. 0161 962 1979.

Reading St. Mary's Church House, Chain Street, Reading. Second Tuesday each month September to May. Enquiries to D.J. Redmond. Tel: 0118 942 1469 (TMS meetings).

Sheffield Meeting Room, Sheffield Transport Interchange, Archway Centre, Pond Square, Sheffield. Meetings held third Monday of month. Enquiries to Peter Fox, 15 Abbeydale Park Rise, Sheffield S17 3PB. Tel. 0114 236 7783.

Southampton (Eastleigh) Eastleigh Railway Institute, Romsey Road, Eastleigh. First Tuesday of month. Details: M. Petch, 23 Meadowmead Ave, Regent's Park, Southampton, SO15 4LW. Tel: 01703 774186.

Taunton St Augustine of Canterbury School, Priorswood Road, Taunton. Third Saturday of month from 14.00 until about 16.30. (Enquiries to Mike Taylor (Hon Secretary) on 01823 601562 or Keith Walton (Hon Chairman) on 01275 857903) (TLRS West of England Group meetings).

Items for inclusion on this page are always welcomed. LRTA meeting organisers are requested to send their programme, plus details of late changes, to the LRTA at 7 Crofton Avenue, Horfield, Bristol BS7 0BP. Fax 0117 951 7785, e-mail: *meetings@lrta.org*

Please allow at least three months in advance to ensure publication. A concise, but accurate address must be provided for all non-LRTA meeting places, with the time and the speaker's name in block capitals.

(Please send items for other publications direct to Ron Howes, 28 Broughton Avenue, Ham, Richmond, Surrey TW10 7TS.)

MUSEUMS

National Tramway Museum, Crich LRTA members get discount with membership card. Open daily to end of October, Sundays November and December, 10.00 to 17.30, later on Bank Holidays and in high season. Admission: Adult £6.50; Child £3.20; Senior Citizen £5.60; Family £17.60.

Light Rail Transit Association
PO Box 302 Gloucester, GL4 4ZD

Founded in 1937

Giro Accounts Subscriptions: 350 3054; Publications: 592 3050
Membership of the LRTA is open to everyone and includes Tramways & Urban Transit (T&UT) each month by post. Membership is available to December 1999 (or 2000) at the following rates. Membership October to December 1999 costs:- **UK** £8; **Europe** £9 (air); **All other countries** £10 / US$ 20 (economy air). Membership October 1999 to December 2000 costs:- **UK** £34; **Europe** £39 (air); All other countries £44 / US$ 74 (economy air). Overseas applicants please contact Membership Secretary at address below (or e-mail *membership@lrta.org*) for methods of payment:
LRTA Subscriptions, 23 Shrublands Close, CHIGWELL IG7 5EA UK.

Hong Kong's Tuen Mun light rail line 720 normally operates twin-car sets. Here 1106 and 1109 display the new corporate livery as they approach the town centre. *John Symons*

Out on the standard-gauge running line of the Danish tramway museum at Skjoldnaesholm are Frederiksberg double-decker 50 of 1915 and newly-restored Odense 12. *R. J. Russell*