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Croydon Tramlink is earning money at last - these were the passengers taking a ride on the inaugural run out of New Addington on 10 May, including the very first in a wheelchair. Unit 2530 was honoured with the first public tram working south of London for almost 50 years - see news story on pages 244 and 245. **Alan Pearce**

**NEWS** Croydon completes the jigsaw - and sets 20 million passenger target; Rail operator wants to extend Metrolink into the suburbs; Liverpool Electric plans get the cold shoulder from city council; Supertram is below-par for jobs says Sheffield University study; Stourbridge people mover trial is still 'live' says Parry; Metro crackdown on fare dodgers; New Wembley stadium to get £72m station; Euro award for DLR's Lewisham unit. Compiled by UK News Editor John Symons. **244**

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Wattle Park on Melbourne route 70, with the city skyline and the National Tennis Centre in the background. The tram will soon carry a new livery (see also World News pages). **Steve Turnbull**

# Light rail takes off

21st Century trams are operating within sight of New York skyscrapers.

By **Charles J. Lietwiler**



**O**n 15 April, in a light rain that lasted most of the day, the initial phase of New Jersey's Hudson-Bergen light rail project was formally opened for service, and trams are once again operating within sight of the skyscrapers of New York. For the first time in North America a light rail project has been realised through a 15-year Design/Build/Operate/Maintain contract, between New Jersey Transit and the 21st Century Rail Corporation, a consortium led by Raytheon, together with the Japanese companies Itochu and Kinki-Sharyo. The contract value is USD 1100 million, making it the largest public works project in New Jersey. However earlier this year Raytheon's engineering and construction entity was purchased by Morrison Knudsen, a railway engineering company that has only just fought its way out of receivership. The ceremony was held at Liberty State Park station, where the operating centre is situated. The governor of New Jersey, Christine Todd Whitman, a United States senator, several congressmen, state assemblymen, and the mayors of Jersey City and Bayonne, all gave short speeches. During her speech, Assemblywoman Rose Heck, chairwoman of the state assembly's light rail task force, praised the late Gordon Thompson for his many trips from Buffalo to solve crises and maintain the forward momentum of the project.

The new system consists of a trunk line from Exchange Place (within a year Hoboken) to Liberty State Park with two branches. One branch follows the main line of the former Jersey Central Railroad to Bayonne. The other branch uses a portion of the Jersey Central's former Jersey City - Newark line as far as West Side Avenue. The initial operating segment is 14.4 km compared with the authorised 32.8 km. Fearful of a repeat of light rail openings elsewhere, in which the trains

Further up Essex Street is the contrast between a rather run-down residential area and new development which is fast transforming the neighbourhood. This northbound car is on the reservation, while the outbound track is in the paved street. *Charles J. Lietwiler*

were jammed with riders who did not want to get off after one trip, NJ Transit drew up a plan to prevent such an occurrence. Passengers were to be given a ticket good only for a oneway trip. Upon reaching a terminal station, they would be directed to leave the train and board buses for the return trip to the starting point. In support of this plan, a number of buses were positioned at 34th Street in Bayonne, and Liberty State Park, Jersey Avenue and West Side Avenue in Jersey City. The plan proved to be unnecessary. The rain discouraged many people from riding the new system. In the end, passengers were allowed to ride at will, for as long as they desired. Although nearly every two-car train had standees, crush loads did not occur. It was originally announced that passenger service would not be offered on Sunday 16 April. This was subsequently changed. However, passengers were required to pay regular fares. Single cars were operated about every ten minutes. Regular service is every 15 minutes on each branch to give a 7/8-minute headway on the common section (but half this frequency in the early mornings and late evenings). Service times are 05.15 to 01.30 daily.

The 29 low-floor Kinki Sharyo cars (68 seats, 122 standees) operate very smoothly and quietly. They have enough power to go up steep grades without slowing down or labouring. No instances of cars being taken out of service due to equipment problems were observed. Unfortunately, however, the interior station enunciators were not working properly.

The system begins at a temporary stub track just north of Exchange Place in downtown Jersey City (a one-stop PATH ride from New York's World Trade Center). It operates on street trackage for two blocks on Hudson Street and four blocks on Essex Street. With six 15 mph (24 km/h) curves on this 2.9-km section, the average speed here is only 8 mph (12.8 km/h).

The northbound track on Essex Street is separated from traffic by a concrete curb. One-way traffic is permitted on the southbound track, and the remainder of the street width is given over to a single lane of parking. Essex Street is not a thoroughfare, and traffic should be limited to the residents who live along the street.

From then on, the track is on private rights of way, with a number of grade crossings, none of which involve major streets. There are no crossings between Liberty State Park and 34th Street, and just three on the branch to West Side Avenue. Crossings are protected only by



# in New Jersey



conventional traffic signals connected to the train signals. There does not appear to be any pre-emption of the traffic signals to permit shorter waits by trains for a signal to change.

The Hudson River waterfront area is in the process of intense redevelopment. Most of the former manufacturing plants and warehouses have been demolished. The few that have not been, such as the Pennsylvania Railroad's freight terminal, have been or will be renovated as office space or apartments. The impetus for this redevelopment is the high cost of office and home space in Manhattan. Similar low-cost space in the waterfront area is available. The rents in the best buildings are USD 33 per sq ft, compared with an average of USD 61 per sq ft in Manhattan. Because of this difference, a number of buildings are being built on speculation, but quickly rented. Jersey City is a few minutes ride from Manhattan on the PATH system or the former Pennsylvania Railroad tunnel to 33rd Street station.

**Tourists on the observation deck of the World Trade Center in New York have a clear view of the Hudson Bergen light rail cars as they go about their business in Jersey City, across the Hudson river. This view shows a southbound car which has just turned into Essex Street. Note the weather vanes on the attractive station building. Charles J. Lietwiler**

The light rail system will complement this redevelopment by providing a fast, reliable means for those who work in the waterfront area or Manhattan to reach their jobs without the need to drive. Parking is provided at 34th Street (28 spaces), 45th Street (218 spaces), with larger lots at Liberty State Park, and West Side Avenue, for an eventual total of 2,939 spaces. Additional parking is under construction at 34th Street. It will be connected with the station by a pedestrian overpass with an elevator to the station platform. A similar structure is under construction at the West Side Avenue station. It will span West Side Avenue and connect with the station platforms, which are about 20 feet higher than the large parking lot. Parking will cost

USD 2 per day, far less than the USD 10 charged at most lots in the central area. Parking fees can be paid at the combination parking and ticket machines at each lot. The only opposition observed was that of the residents on one block of Essex Street, who have opposed the project from the beginning.

The fare structure is somewhat complicated. Unlike other light rail systems, where the rail and bus fares are identical and transfers are free, the Hudson Bergen system charges a premium fare for rail with no transfers to buses (a function of the private sector operation). The one-way adult fare is USD 1.50, compared with a USD 1 bus fare. It is valid for 90 minutes. Ten-trip tickets cost USD 13. A monthly pass costs USD 53 (USD 93

with parking), a 25% reduction over single tickets if 25 or more trips are taken. In addition, holders of monthly passes can transfer to and from local bus routes without additional fare. Seniors over 65 can ride for half fare at any time. Those between 62 and 64 can ride for half fare during off-peak hours. Ticket machines will also sell tickets for PATH trains. Revenue inspectors can levy USD 71 fines for fare evasion.

The ticket machines seem unnecessarily complicated to use, and the queues which built up during the first rush hours indicated a source of frustration that will need to be addressed. Instead of pushing one button to select the type of ticket desired, a user must first answer a series of questions. Data is displayed electronically on a screen, and may be difficult to read when sunlight is shining directly on it. These machines are the same type that are used on the commuter railroad lines operated by NJ Transit. Work is in progress to extend the line northward from Exchange Place. The extension includes three stations: Harborside, Harsimus Cove, and Newport (near Pavonia/Newport PATH station, and site of a huge shopping mall). This addition is scheduled to be completed and placed in service by Christmas 2000. In 2001 service will reach the recreated transport interchange at the former Lackawanna station on the Hoboken waterfront.

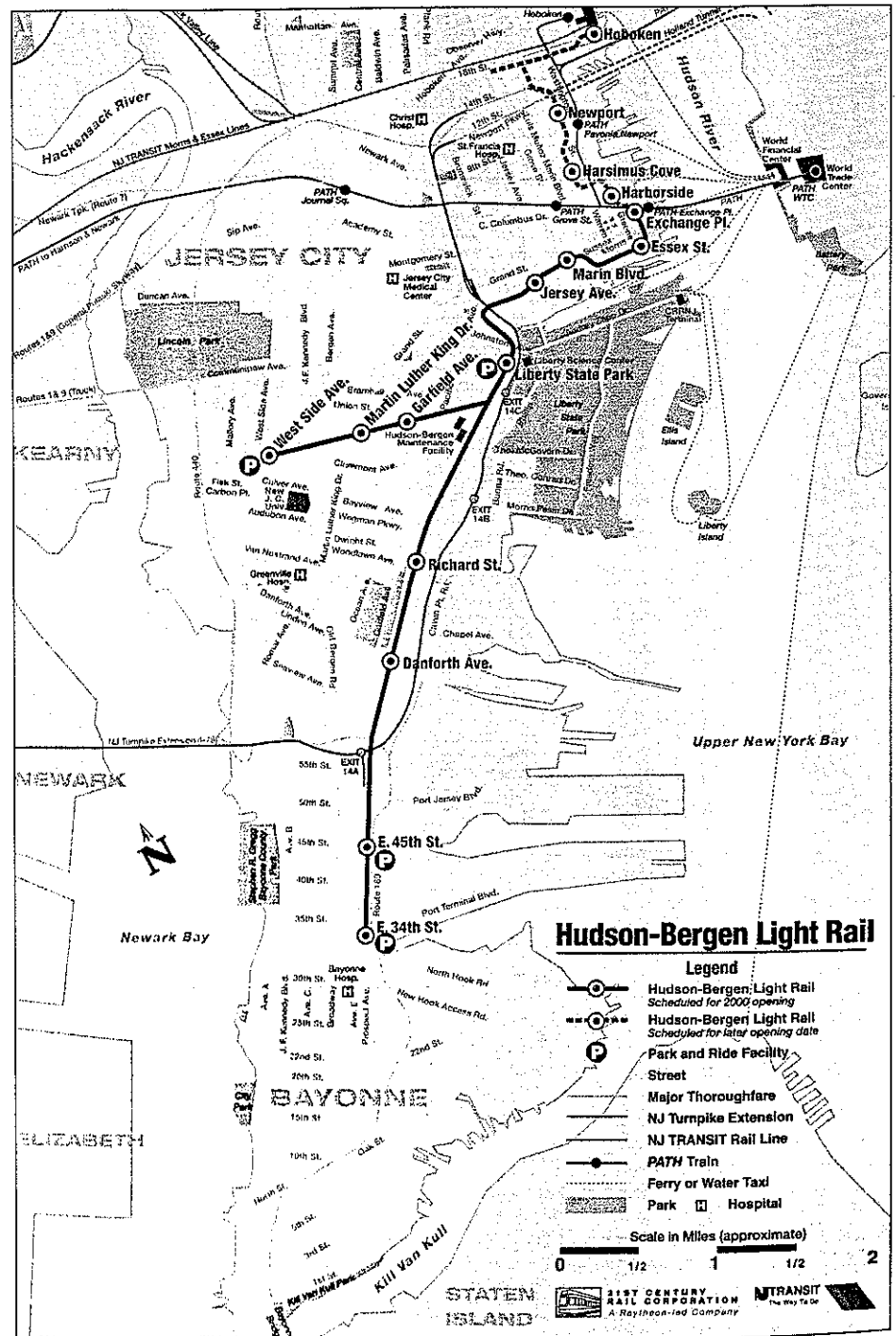
Eventually, service will be extended to 5th Street in Bayonne and the West Side Avenue branch will also be extended by one station. Future extensions will continue north of Hoboken to Weehawken and then through the former Conrail West Shore railway tunnel under Union City to the Vince Lombardy Park & Ride site in Ridgefield Park, Bergen County. The target is to carry 100 000 passengers/day by 2010. After one month of operation of the first section to open, 3800 passengers/day were being carried.

The Hudson-Bergen line is just one light rail project being pursued by New Jersey Transit. On 8 May Governor Whitman was making a speech again at the ground-breaking ceremony for the Trenton-Camden light rail line, a 54.7-km link that will cost USD 604 million and take three years to build. Last year New Jersey Transit agreed to buy an existing railroad from Conrail for USD 67.5 million. Immediately, the agency awarded the contract to design, build, operate and maintain the system to a consortium led by the Bechtel Infrastructure Corp. and ADtranz of Pittsburgh, a subsidiary of Daimler-Chrysler.

Under the 13-year contract, the consortium will be paid USD 453.3 million to design and build the line and USD 151.2 million to operate and maintain it. The line will run over existing railway tracks between the two cities, with some new track in both Trenton and Camden to reach the central areas. Light rail trains will operate from 06.00 to 22.00 daily, with freight trains continuing to operate during the night. The project includes building 20 stations, improvements to more than 50 level crossings and repairs to, or replacement of 17 bridges. Electrification is not on the agenda - rolling stock will comprise 20 ADtranz/Stadler GTW2/6 low-floor diesel railcars. And NJT's existing light rail line, the Newark City Subway, is in the middle of wholesale modernisation, with new overhead installed, a short extension to a new depot, and replacement of the immaculate PCCs by 16 low-floors cars matching those on the Hudson-Bergen line. On Saturday 6 May Kinki Shalyo LRV 113 was first to operate clearance tests on the line. 114 was also used for trials later in the day. At the other end work is in progress to extend the subway 1.6 km from Penn Station to Newark's Broad Street commuter rail station, the first part of what could be a much longer light rail line to the airport and Elizabeth.



On the former Jersey Central Railroad alignment to Newark an outbound car to West Side Avenue sets down passengers before passing under the highway by a new underpass. Charles J. Lietwiler



# Napoli's new future with trams

The transformation of southern Italy's largest City will not be complete until transport problems are resolved, reports **C. J. Wansbeek**.

**W**ith 2.2 million inhabitants, Napoli is by far the largest population centre in southern Italy, a bustling city confronted with big-city challenges. There are almost no parks, and the city is plagued by a lack of building space. Tourism is a major source of revenue.

No city in Europe counts more inhabitants per square kilometre. The visitor cannot but feel overwhelmed by the vista of Vesuvius, the volcano which erupted in 79 AD, embedding the city of Pompeii in a mass of solidified ash. It is a short hovercraft ride from Napoli to the garden islands of Capri and Ischia.

Scores of new glass-and-steel high rise office buildings dominate the skyline, dwarfing the once-mighty towers of the 13th Century Cathedral. Composed of a 15-km long string of bay-side and hill-side neighbourhoods.

Naples has long been notorious for its crime, poverty and decay. This no longer holds true. Much progress has been achieved, in particular since Antonio Bassolino was elected mayor in 1993. He has cleaned-up Naples.

Hundreds of corrupt civil servants were fired. The local police were reinforced, and have cracked down on the criminal fraternity. City services were improved. Rubbish is now collected on time. The fountains are once again spouting water. The old city centre is being restored, hundreds of monuments have been cleaned up. The sea shore is being transformed into a swathe of parks, hotels, and modern residential complexes, on sites formerly occupied by run-down factories.



**Dr Renato Muratore,**  
Director-General of ANM

However, it is a job unfinished. The road situation is in urgent need of improvement. All over the city one sees viaducts, ugly steel structures rising high above the houses. From the east-to-west *Tangenziale*, a superb highway which connects with the airport, the visitor enjoys a breathtaking sight of the historic city, hundreds of metres below him. Even this highway is plagued by semi-permanent traffic jams, often nothing seems to move, with many cars stalled on chillingly-steep access roads. Naples seems one gigantic traffic jam.

In the city, buses and trams move frustratingly slowly. All trams and bus lanes are used by private motor cars, in a city where a red traffic light means almost nothing. There is much aggression among road users. The police seems unable or unwilling to impose a minimum of discipline on the roads. Here, only public transport can be the solution. The modal split between private and public transport is favourable, 30-70, which means that in comparison with other European cities, Napoli boasts a very large market share for public transport. Plans are being implemented to upgrade the public transport and a major role has been reserved for the tramway system.

Discussing these developments with the professionals of *Azienda Napoletana Mobilita* (ANM, formerly known as ATAN), one is struck by their enthusiasm about the tram's future. In 1999 the city council of Napoli decided that the tramway system should be maintained and upgraded. This marks a reversal, after a 20-year period in which almost nothing was invested in the tramway and trolleybus systems. The new policy stems from a preference for electric traction. This embraces the metro system, the four-line network of funiculars over the city's



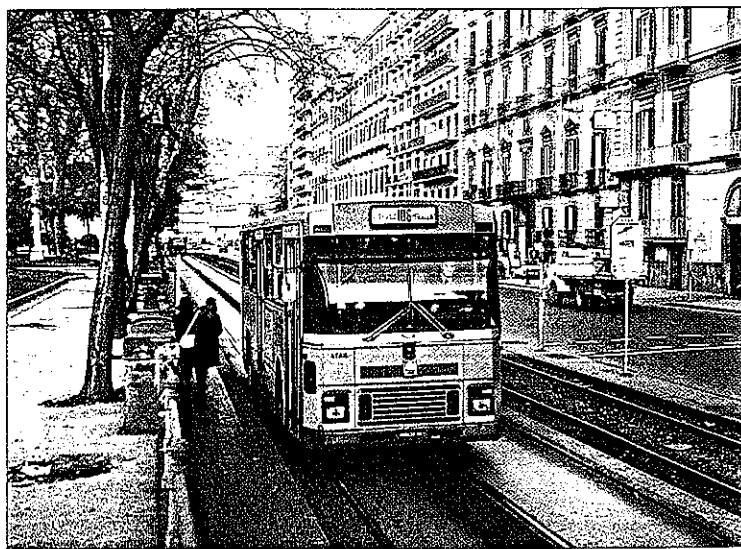
The SFSM *Ferrovie Circumvesuviane* operates 144 km of narrow-gauge electric light railway carrying some 25 million passengers/year. This scene is at the outer terminus of Sorrento. *M. R. Taplin*



ANM tram 990 on route 4 makes its way across Piazza Garibaldi, the future hub of the tramway system. The contrast between the high-floor tram and the low-floor airport bus following will soon be overcome when the first articulated low-floor trams arrive.  
C. J. Wansbeek



Piazza Garibaldi is over-run with traffic, including hundreds of buses. A big tidy-up is planned for this square in front of the railway station, where in future several tram routes will meet. C. J. Wansbeek



The inbound tram track along Riviera di Chiaia has been paved in order to create a bus lane. However, the outbound track is on tram-only reservation.  
M. R. Taplin

steep hills, plus the suburban commuter railways, as well as trolleybuses and trams.

ANM's trolleybus network will be modernised soon. Starting 2001, Ansaldo will deliver 75 twelve-metre trolleybuses, which can run on diesel traction, as well as electric, thanks to a built-in motor (for emergencies). The trolleybus order, placed in 1998, represents a value of EUR 33 million. With the delivery of the new trolleybuses, it will be possible to re-activate several temporarily closed lines. The wires are still in place, intact, so service can be resumed.

Much money has already been spent on a thorough renovation of the funiculars, which are essential in a city built on steep hills. The funiculars are the fastest connection with the area of Vomero, built on hills west of the city centre, with the highest point served by the cable cars at 150 metres above sea level. The

three most important funicular lines have their termini near the metro station of Vanvitelli, where many passengers make use of the interchange facility. The funiculars carry a daily average of 50 000 passengers, who pay normal fares, as if riding a bus or tram service. So far, EUR 10 million has been invested in the modernisation of the funicular line known as Centrale. Another funicular line, called Chiaia, will be modernised in 2001-03, at a cost of EUR 13 million.

Now it is the turn for the tram. The entire standard gauge system will be equipped with R160 rails, replacing the UNI 51 (Ir) rails in the pavement and the UNI 46 and UNI rails used for tracks on reservation. The wooden sleepers on ballast will be replaced by a ballast-free system, resulting in much lower maintenance costs. The 100 mm<sup>2</sup> copper alloy overhead wire will be replaced by 120 mm<sup>2</sup> wire. In

2001, the trolley poles and wheels will be replaced by pantographs. The traction voltage will go up from 600 V dc to 750 V dc. Following the example of the trolleybus system, the entire tramway feeder system will be equipped with new electric substations, and the installation of new underground cables. The renewal of the substations for both the trolleybus and tramway networks costs EUR 16 million, of which eight million has already been invested. Tram tracks will be on reservation wherever possible, and the commercial speed of the tram should be increased from today's average of 12 km/in to almost 15 km/in in 2004. The money for these measures has already been allocated.

Currently, an order is being prepared for 22 articulated low-floor trams, now that an EU-wide tendering procedure has been rounded off, after it had been started in



November 1997. ANM had reserved a maximum of ITL 50 000 million for the purchase of the trams, and as part of the tendering procedure, it had indicated that this sum would be sufficient for at least 20 units. In fact, it got two units more, with the choice now made in favour of the Ansaldo Sirio. This makes ANM the second customer of the Sirio, a 100%-lowfloor tram developed by Ansaldo. As reported earlier by this magazine, Sirio's launch customer is the narrow-gauge light rail line now under construction at Sassari, on the island of Sardinia. Napoli's old 10 metre long trams will remain in service, side-by-side with the articulated, 18-metre long, Sirio trams. However, there will be no revival of the situation of the 1950s, when private motor cars

were scarce. In those years, a complete 165-km tramway network served the entire urban area of Napoli, as well as many suburbs. In the early 1960s the long interurban tramlines in eastern Napoli were converted to trolleybus operation. In 1967, only five tram routes survived, the end seemed near. In 1981, one single tram line remained in service. But in 1983, two tram lines were reinstated. In 2000, altogether four tram lines are running, carrying 9 million passengers/year. Hopes are that there will be five tram lines in 2004, and their number may further rise in later years.

By far the busiest tram line is route 1, from Poggioreale in north-east Napoli to Piazza Sannazaro. This line goes through the city centre, passes by Stazione Centrale, and

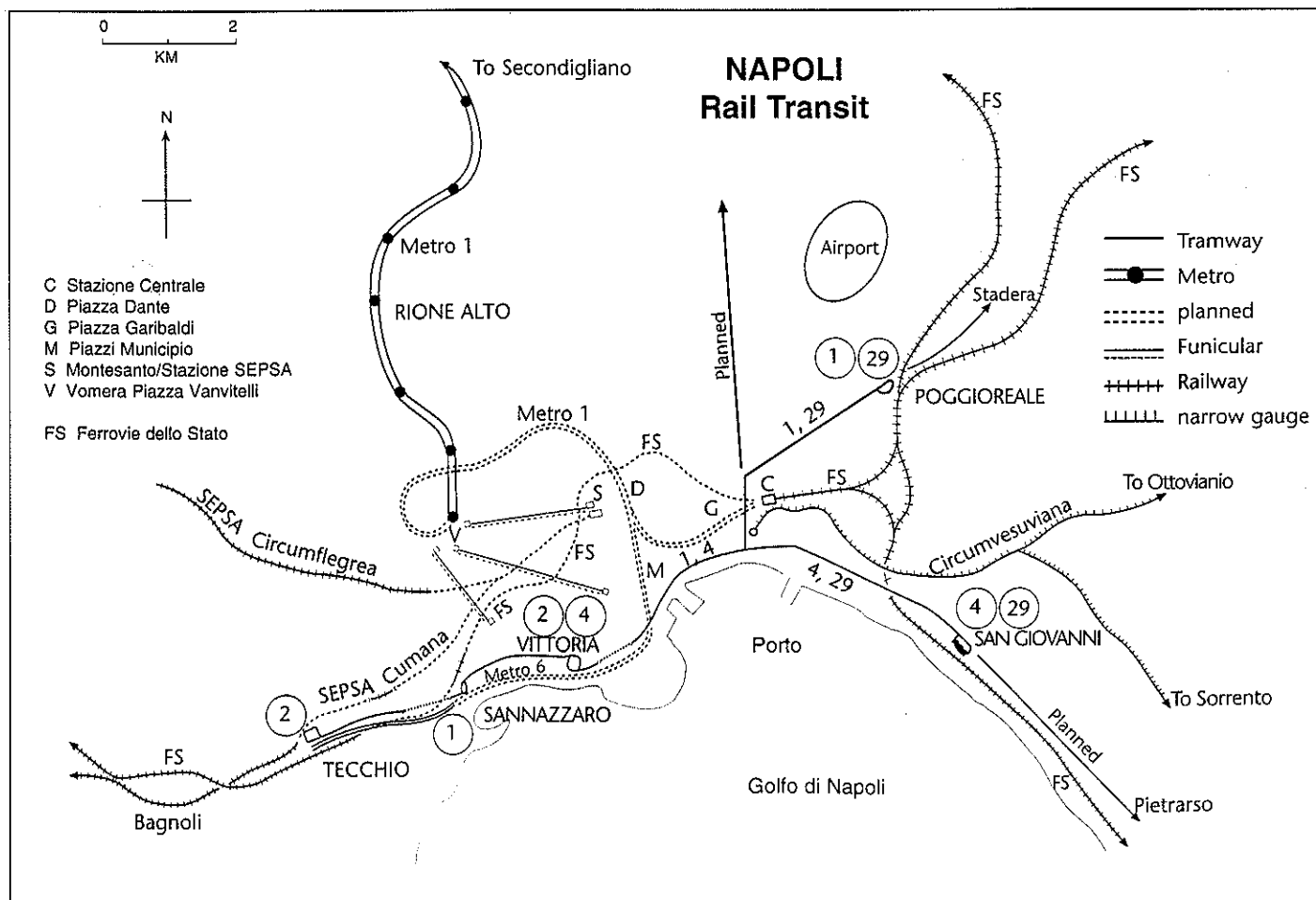
continues over the long coastal tram route, which is on reservation. Route 2, which is a bayshore line which partially overlaps route 1, goes much further west, to Piazzale Tecchio near the San Paolo football stadium. Included in the fascinating coastal tram route of lines 1 and 2 are two long, dark tunnels, also used by motor traffic which, speeding forward in thick droves, make a howling, thundering noise.

Until June 1999, tram route 1 covered the entire distance from Poggioreale to Piazzale Tecchio, and onwards to Bagnoli in western Napoli; then it was curtailed to Piazza Sannazaro. At that time, a new route 2 was introduced, to serve the western part of tram system which carries far less passengers than the rest of the network. In effect route 1 was divided into two sections. An additional reason to introduce route 2 may have been that the tram tracks in the western part are often blocked by motor cars, which tends to make tram service vulnerable to delays in this part of the city. The days of tram line 2 are numbered however, as the city has decided to concentrate the tramway system on the central, northern and eastern parts of the town. At a date which has not yet been determined, route 2 will be discontinued, and some 5 km of tram tracks, partially on roadside reservation, will be lifted. As described below, route 2 will be replaced by a new underground rail line, metro line 6.

The eastern part of the coastal tram route goes, almost in a straight line, through a flat land occupied by unappealing industrial complexes and crowded neighbourhoods. The terminus is at bleak, unattractive San Giovanni, where there is a 9-track shed (hidden behind a metal gate), in use as Napoli's only tram depot. Plans exist to relocate the tram depot some four km to the west, to a more central site, now in use as the trolleybus depot at Corso Lucci. This swap can only occur after another site has been found for a new trolleybus depot.



SEPSA runs the *Ferrovia Cumana* and the *Ferrovia Circumflegrea* connecting Montesanto station in Napoli with the towns west of Napoli. One of the Cumana EMUs is seen at Bagnoli. M. R. Taplin





Waiting for a motorist to clear the tracks is a familiar sight on the Napoli tramway. This tram is on route 1 in Via G. Bruno, near Sannazaro terminus. C. J. Wansbeek

The city council recently decided to build a number of entirely new tram lines to serve the flat parts of the city, in the north and the east, with Piazza Garibaldi as the hub of the future tramway system. This vast square, in front of FS mainline rail station Stazione Centrale, will be entirely remodelled, to give it a more passenger-friendly appearance. The messy and unappealing railway station itself will also undergo a major remodelling soon. At and near this station, there is a convenient interchange with the railways, the metro and the Circumvesuviana commuter railway network.

Apart from building new tramways, the northern part of line 1 will be relaid on a reserved median strip, replacing today's gutter running. The new tram lines, as outlined in the city's official traffic plan, will all serve densely populated neighbourhoods. The new lines will have a total length of 17 km, which will come on top of the basic network of 8.4 km remaining in service after the closure of route 2. The first thing to do is to entirely upgrade these 8.4 km of tracks. After that, the four new lines will be built step-by-step. They may seem like simple straight lines on the map, but the building work will require a careful planning and execution.

The new tram lines, all to be built before 2011, will use a standard pattern. They will make use, to the maximum extent possible, of existing bus lanes. Tram tracks on reservation will be laid, but in all cases the future tramlines will be extended beyond the termini of the bus lanes involved. The city has decided to that the following tram lines must be built first:

San Giovanni-Pietrarsa, a 2-km bay side extension beyond the existing tram depot; Poggioreale-Stadera, a 2-km extension beyond the present terminus of line 1;

■ Piazza Garibaldi (Stazione Centrale)-Secondigliano and Picinola, a 4-km extension;  
■ Piazza Garibaldi (Stazione Centrale)-Via Argine, a 4-km extension through a new residential area.

With new rolling stock and new tram lines,

the face of the system will change dramatically. Today's tram fleet is composed of 35 trams, all of 13-metre long class CT139K. They are all that remains of a one-time fleet of 104 four-axle single-ended trams, numbered 951-1054, delivered by IMAM-Volturno in 1934-36.

These robust trams have automatic folding doors at the rear and the front end. In 1961, 14 of these trams were rebuilt into trailers, but they were withdrawn from service soon, with the exception of two, which were rebuilt into motor trams again. In 1975, the bodies of 50 remaining trams were modernised and streamlined front and rear sections were added. The trams have room for 20 seated passengers and 80 standees.

These single-ended trams are operated as single units, in one-man operation. In each tram, there still is the (empty) conductor's seat, at the rear end of the vehicle. But the conductor will not return, for cost reasons. A pity, as trams seem the preferred working area of *borseggiatori* (pickpockets). All trams have been painted in the Italian standard orange, after many decades in their original two shades of green livery. The fleet numbers of the trams have remained unchanged during all these years. Surprisingly, the 9511054 series were not the newest cars in service. By 1940, new articulated single-ended trams of a lightweight streamlined design entered service at Naples, built on two two-axle trucks. They belonged to the 1100 class and the 1150 class respectively. It is impossible to retrace when these trams were withdrawn.

Trams definitely have a bright future. At ANM it is explained that the tramway of Napoli in the 21st Century should be a reliable, comfortable street-running system. The future tram lines will be not-too-long, say 5 km in length on average, in order to keep the tramway system manageable and reliable. There is no interest in any experiment, for instance with a Karlsruhe-model of tram-train operation.

However, 20 years ago, Napoli seemed inspired by something new at that time - the German *Stadtbahn* model. By 1980, work was

## Practical hints

Napoli, Pompeii and the nearby islands are all major attractions. Visitors can enjoy art treasures in its museums, relax in the restored historic inner city, or wander around in fashionable shopping streets.

The best train to Rome is the non-stop EuroStar, a deluxe service operated by smooth-riding, air conditioned ETR500 trains, running every 2 hours, and covering the 300-km distance in 1 hour 45 minutes. Buy train tickets with seat reservation at least a day in advance.

In 2003, rail travel time to Rome will shrink to a mere 1 hour 5 minutes, with the inauguration of the new Direttissima (super fast tracks, built almost parallel to the existing line via Latina). At Napoli, one comfortable middle-class hotel is particularly recommended for the independent traveller.

This is Starhotel Terminus, Piazza Garibaldi 91, tel. 081- 7793111, adjacent to Stazione Centrale. Very quiet rooms go for 235 000 LIT, including a filling buffet breakfast. The Terminus can be reached by the blue airport buses, run by CLP, ticket price ITL 3000, from the airport straight to Piazza Garibaldi.

in progress to create the LTR, *Linea Tranviaria Flapida*, a 750 V dc light rail system. The LTR was designed as a 20-km long East-West express tram line, in tunnel for 30% of its length, on viaduct for 40% and on surface for 30%. In fact, it was envisaged that the LTR line would replace the long bayside tram route.

At its eastern extremity, the LTR line was to have been built in the form of a wide loop through Barra, one of the most densely built-up areas of eastern Naples. The LTR line was to have been equipped with semi-automatic signalling system. Surprisingly, a classic tramway-type of level crossing with street traffic was also included in the design of the LTR route.

A 2-km tunnel section between Fuorigrotta and Mergellina for use by the LTR had been completed well in time for the World Cup Football Championships of 1990, to be held in the Sao Paolo Football Stadium, opposite the future LTR terminus at Piazzale Tecchio (where nowadays one finds the terminus of tram route 2). But the LTR project proved too ambitious. The boring machines did not



function properly, and the scheme was shelved.

Six articulated LTR trams of class T67, of a planned series of twelve, were delivered by Ansaldo in 1990, and received unit numbers 001 to 006 inclusive. Each T67 tram can carry a maximum of 240 passengers. The new trams were designed to run in coupled sets of three. The six trams are now waiting idle in the completed tunnel section (which, so far, remains isolated from any other rail network in the city). ANM will use them for a future metro service to replace tramline 2. This future metro line 6 will run from Piazzale Tecchio to Piazza Municipio, and will thus be in the form of an east-west line parallel to the coast line. At Piazza Municipio, metro line 6 will have interchange with existing metro line 1.

The LTR concept had been inspired by the 1990-inaugurated express tram line in the port city of Genova, in North Italy, where coupled sets of Ansaldo AM 6 class trams are in service today. Genova's 3km long Brin-to-Dinegro line makes use of a tunnel originally built for use by classic tramways. Currently, the Genova express tram line is being extended at both sides, as a vital tool for the further development of this city. Many had wished that Naples, which has much in common with Genova, would team up with Genova. The Genova AM 6 trams are of a design similar to that of the T67 trams of the Naples LTR scheme. But in the end, Genova and Naples each went their own way.

Recently, the Italian Government has made available generous subsidies to complete the LTR tunnel. The tunnel will be used for future metro line 6 (much shorter than the original LTR idea), entirely underground, to be completed between 2007 and 2011, between the bayside area of western Napoli and Piazza Municipio. At this point, an underground track connection will be built with metro line 1, to enable the T67 trams to undergo maintenance at the central metro repair works at Collinare, near the northern terminus of the metro. At Piazza Municipio, there is also an interchange with existing tram lines 1 and 4, both of which will remain in service.

The western terminus of the future underground metro line 6 will be at Piazzale Tecchio, in the area of Bagnoli, opposite the Sao Paolo stadium, where today there is the terminus of tram route 2. To pave the way for the completion of the underground line, an agreement was concluded with Ansaldo, the company to which the original concession to run the LTR line had been awarded years ago. Since then, Ansaldo had changed hands. It was sold by the State-owned IRI conglomerate, to Breda.

Despite tram plans, top priority for the City Council lies in a further expansion of the metro network. Naples seeks a bundling of several urban and suburban rail lines belonging to different transport undertakings under the common denominator 'metro'. The difficult topography marked by steep hills explains why this step-by-step approach has been adopted.

Pretty classic by concept is standard-gauge metro line 1, for which Ansaldo built a series of twelve articulated train sets, able to carry some 500 passengers. Like Milano metro lines 2 and 3 and both metro lines of Rome, line 1 of Naples is fed by 1500 V dc, from overhead catenary. This line was planned in the 1960s, and inaugurated in the 1990s. It runs from Piazza Vanvitelli north to Secondigliano. After completion into the city centre, this line will include a unique 270-degree loop, built in a 5% gradient. Noteworthy is metro station Rione Alto, at 44 metres below street surface, accessible by high-capacity elevators.

Line 1, with its wide loop, will be extended to

become a full circle line. By 2005, the circle will be completed, by an extension from Secondigliano to Stazione Centrale with an intermediate stop at the airport. Work on this extension of metro line 1 is now underway. Also under construction is the section between Vanvitelli and Piazza Garibaldi. Metro line 1 is partially in tunnel, and partially on viaduct. At Vanvitelli station, there are long escalators leading to the termini of two different funiculars.

There is a plan to create a rapid transit authority for the greater Napoli Area. This authority might also be in charge of the future metro line 2, in the form of frequent suburban train service over the FS mainline.

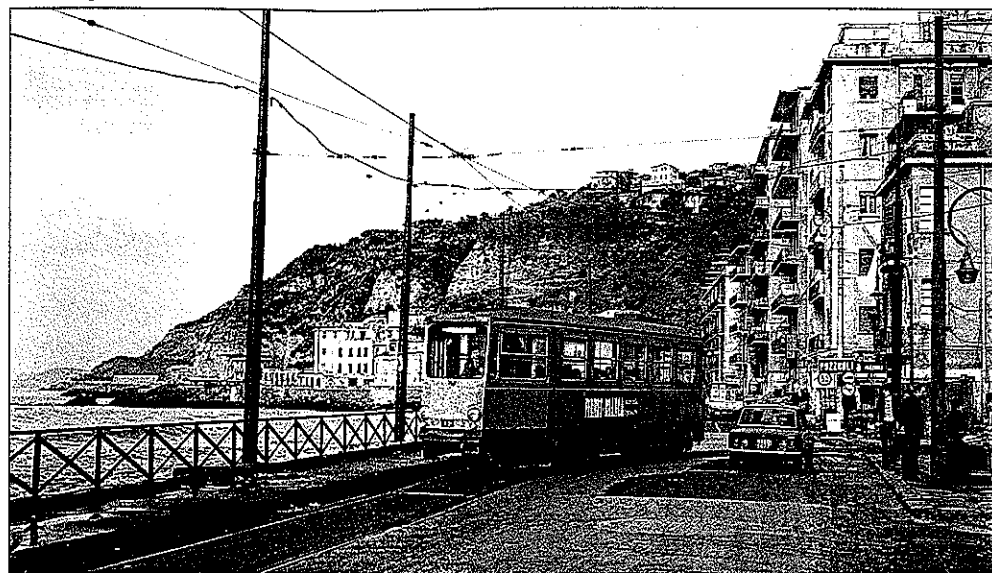
Using a tunnel in the inner city, line 2 would run from Stazione Centrale to the western suburbs near the bayshore, as far as Pozzuoli. Already now, there is a dense suburban traffic over this line, now has headways of 7.5 minutes, and 20 4-car train sets of the FS series 724 are in service. A problem to be solved is the low height of the platforms, much lower than the floor height of the trains. Future metro lines 3 and

post at Napoli. With an annual 40 million passengers carried, the majority of them commuters, this is one of Europe's most progressive suburban rail networks. The commercial speed of the Circumvesuviana's trains is 40 km/h; this undertaking even offers non-stop super-fast direttissima rush-hour services to the outlying cities and suburbs, despite the fact that part of the network is singletrack.

Likewise, future metro lines 5 and 6 will be created by introducing metro-like services over the standard-gauge tracks of SEPSA, a railway company serving the area west of Naples.

There is now a bright future for the trolleybuses, which have served greater Napoli since 1940. At its zenith in the 1960s, the system comprised 12 different routes, for which over 150 trolleybuses were available. Nowadays there are four trolleybus lines, with basic 15-minute headways for route 255, and 30 minute headways for the other lines.

The trolleybus fleet consists of 35 units, the remainders of two series, 8001-8078 and



**The scenic route to Bagnoli is now closed, but took trams west to the boundary of the neighbouring town of Pozzuoli. 1001 runs round the seafront loop. M. R. Taplin**

4 will consist of suburban parts of the Circumvesuviana. This is the name of a State-owned railway company operating electric narrow-gauge (950 mm) lines serving the area east of Napoli. Total length of the system is 144 km. The terminus is near the Stazione Centrale mainline station (which will also become the hub of the future tramway network).

Altogether, some 25 km of the Circumvesuviana will be upgraded to metro standards, integrated in the route planning and fare system of the greater Napoli metro network. All Circumvesuviana rail lines have 20-minute headways, so this system is already very much in metro style. Headways of 10 minutes are seen on sections shared by two lines. The company's rail lines go as far as Baiano (38 km from Naples), Sarho (38 km), Sorrento (42 km) and Poggioreale (34 km). The first two mentioned lines run north of the Vesuvio volcano; the other two south of it. There is also a branch line serving the Alfa Romeo car factory. Already 20 years ago, the busiest part of the Circumvesuviana had been laid in open cutting or subway, to eliminate all level crossings with road traffic. This is the section between Stazione Centrale and Torre Annunziata, which has been made double-track over its full length. At Napoli, the terminus station of the Circumvesuviana comprises 13 tracks. The entire Circumvesuviana network is computer-controlled, from a central monitoring

8301-8306, delivered by Alfa Romeo in 1961-64. Soon the delivery will start of 75 Breda/Ansaldo low-floor trolleybuses, old lines will be reinstated and headways on existing trolleybus lines will be improved. It had been intended that ANM would purchase second-hand trolleybuses from the nearby city of Salerno, where trolleybus operation had ceased in the early 1990s, but this plan fell through as the Salerno vehicles have been impounded by Government investigators.

At Piazza Carlo III, there is an overhead wire link with another trolleybus network, that of CTP, which operates two long interurban trolleybus routes to the area north of Naples. CTP route M13 runs to Aversa, route M15 runs to Secondigliano.

Among the improvements ANM is preparing is global positioning satellite-based control by of its trams, buses and trolleybuses. There will be one supervisor for each group of four of five city lines, who will monitor the movements of the rolling stock. The supervisor will take appropriate measures as soon as irregularities are reported. A large number of bus stops will be equipped with electronic displays providing dynamic passenger information on all approaching buses.

The author would like to thank Dr. Renato Muratore, Director-General of ANM, and members of his staff for their kind assistance with the preparation of this article.

# Manchester Metrolink's success is its key role in integrating city transport

I was actually riding on Manchester Metrolink when I read the rather grumpy letter from F. F. Mitchell in May's *Tramways and Urban Transit*.

It was criticism all the way, concluding with a snarling "Frankly, if this is the best that can be done... the sooner we install guided trolleybus the better".

I suspect Mr Mitchell hasn't appreciated an important point about Metrolink. Its big advantage and the reason for its undoubted success is the contribution it makes (and will increasingly make as it expands) as part of the transport network.

The original lines solved a major problem - Manchester has always had by providing a link (the only reliable one) between Victoria and Piccadilly stations and across the city centre - as well as providing commuter lines to Bury and Altrincham.

Additionally, Metrolink gives easy access from the towns on the north side of the conurbation via the Victoria interchange to G-Mex Centre, Bridgewater Hall and the 'Old Traffords'. Previously, this was a very complicated journey involving a tedious bus or expensive taxi ride across the city centre, then another train.

In the reverse direction, it eases the journey from the south side of the city to the main shopping areas (some distance away from the stations on the Piccadilly-Deansgate rail line) and to the M.E.N. Arena over Victoria station.

The Salford Quays extension extends this facility. Street-running may be relatively slow

but easy interchange, reliability and sheer convenience make up for that. Joint ticketing helps, too. The Rail Ranger ticket giving access to all rail services in the Greater Manchester area has always included travel on Metrolink within its city zone. It's noticeable how many people go one stop on Metrolink from Victoria to the Market Street shopping area.

New ticketing arrangements under the general 'Integrate Initiative' heading have introduced more variety - bus and train, bus and Metrolink, train and Metrolink (at £5) and so on. The explanatory leaflet produced by GMPTF in conjunction with the opening of the Salford Quays extension even lists feeder train and bus frequencies, journey times from out-of-town stations and bus terminals and city centre interchange points.

I agree with Mr Mitchell that the section between Pomona and Anchorage is - shall we say - interesting, but the line had to be laid within an established street pattern, (including the horrendously busy Trafford Road), cope with existing buildings on Exchange Quay and it had to cross a section with no ground-level route for its trackbed between the Salford Quays and Anchorage stops (as I found out when I tried to walk from one to the other).

This explains the tight right-hander from the Pomona stop (on the narrow neck of land between the Bridgewater and Ship Canals), the canal crossing - leaving navigable headroom - then immediately down to ground level, doing a sharp left-and-right hander

between the office blocks on Exchange Quay (which were built some years ago) on the way. The same constrictions also account for the sudden curving up-and-over just before Anchorage.

I also agree there's something odd about timings but I suspect this may be dictated by the temporary terminus at Broadway and the need to interleave the Salford Quays service with others through the city centre. That said, a journey time of 16 minutes from Piccadilly Station isn't bad considering the only section of conventional rail running is between G-Mex and Pomona.

However, I think there's something odd about Mr Mitchell's timings if he thinks the bus from Eccles will get to the city centre twice as fast as Metrolink. Gridlocking is a regular occurrence from the point where traffic from the M602 meets Eccles New Road and the notorious Trafford Road (and then all the way on into Manchester).

The opening of the Lowry a few days before I paid my most recent visit is certainly boosting the number of people using the line and I noticed that although there were hundreds of people visiting the building there were relatively few cars around. Certainly the tram I was on had a good number of obvious visitors on it - and, of course, a good number of even more obvious 'tramaholics'. You can always tell - they head for the front seats and look remarkably cross when they don't get them!

Keith Parry  
Littleborough, Lancashire

## Discovering old tram lines near Madrid

Correspondence about remaining sections of old tramlines in various issues of *T&UT* it prompts me to recall a visit a couple of years ago to El Escorial near Madrid.

Having looked at the monastery for which it is famous we took a stroll around some back residential streets and came across a length of apparently old tramline. This surprised me as the settlement is only a village or very small town (unless we missed the bulk of it). Can anyone throw any light on this unusual situation?

Malcolm Lister  
Chester

## Italian interurban dates

In *T&UT* (May), Mike Ballinger ('Another Swiss closure tragedy') mentioned Italian interurban trams connecting with FLP.

In fact, the following lines existed: Varese-Ghirla-Luino (1903-1955, electric from 1915) Luino-Ponte Tresa (1885-1948, electric from 1921) Ponte Tresa-Ghirla (1915-53, electric from 1915). Gauge for all three lines was 1100mm.

Jörg Zimmer  
Germany

## John Prescott has become the procrastinator

The opening of Croydon, the start of work on Nottingham, and the smiling face of the Deputy Prime Minister inside your front cover of the May issue should remind us that well over a year ago public inquiries were held in connection with applications for Transport & Works Act orders to authorise tramways in north Leeds and between Fareham and Portsmouth via Gosport.

The inspectors' reports on those

enquiries have been on the Prescott desk for months, yet no decision has been forthcoming.

Why is this? The TWA procedure gives legal authority to build the system. The provision of any government financial support is a separate process.

If the UK government is keen to see private finance contributing to these schemes, then leaving potential investors in doubt about the legal authority for the scheme is

no way to go about it.

The TWA process was supposed to make it easier to obtain legal authority for a new tramway easier than the previous Parliamentary process, yet it leaves the determination with the same Minister who has to make the subsequent decision on finance for the system. Procrastination is the result.

Dermot Staveacre  
World's End, Hants

## Noise from trams? Not in the modern age

Dr. G.D. Towner asks (Letters pages, May 2000 *Tramways & Urban Transit*) whether wall-mounted wires can transmit noise of the moving pantograph on the wire across to the building.

While it is certainly true that, in the days of trolley poles with wheel collectors, one could put one's ear to the roadside traction pole to detect the approach of a tram as a

result of the vibration so transmitted, the slide of a graphite-greased pantograph on a smooth wire only produces negligible wire-transmitted noise.

Even that noise, I would suggest, is absorbed largely by the filamentary plastic material of the span wires supporting the main running wire. Accordingly, the point of attachment to a wall should be

so remote from the (negligible) noise source as to be immaterial.

I certainly know of no instance where this has ever been a problem, and certainly never in residential buildings where I have stayed with tram wires suspended from them.

Graham Feakins  
LRTA Assistant Development Officer  
Croydon



## Skytrain: Smart, but simply too expensive

The Bangkok Skytrain whisks you in air-conditioned comfort along impressive structures giving new vistas of this vast city.

End to end it's only 60p, a fare structure unlikely to make much impact on the huge construction costs.

Cheap fares by UK standards, they are not by Thai standards. Up until weeks before its highly significant opening date of King Rama IX's 72nd birthday, arguments raged about the proposed fares being too high. A lower scale seems to have prevailed.

Fares are still too high to be of use to many of Bangkok's vast numbers of commuters and it is a limited system covering a small part of this huge metropolis. It would be naive in the extreme to suggest it will make much impact on the City's notorious traffic congestion.

But it looks good and cost a bomb. Politicians can stand up proudly and say look what we have done and how much we have spent.

So what relevance to the UK? The Government got it right two years ago. The only realistic public transport solution to congestion is

the bus. It is flexible, reacts quickly to changing demand and covers entire areas not individual corridors. But there is a snag. Buses everywhere are hampered by congestion. Solving this means restricting the motorist. This is not some multi-headed demon, it's you and me. And we have the vote.

Suddenly, the Government has gone cold on buses, but still has to pay lip service to tackling the transport problem. It needs something that looks good, costs a bomb and allows it to proudly say: "Look what we have done and how much we have spent."

Enter light rail. Tram proponents may well enjoy the apparent turning of the tables. Be under no illusions, this Government's sole aim is to get re-elected.

**Roger Davies**  
Transport Consultant  
Linton, Kent

## Historic tram film footage sought

As part of our policy of raising funds for tramcar preservation, OnLine Video has released several tapes in its series 'Trams Around the World' series, the most recent being 'Trams in Denmark', made in full co-operation with Sporvejsmuseet Skjoldenaesholm. Now, OnLine is urgently seeking film of the following:

French and Spanish trams (especially pre-1963); Belgium (pre-1963, especially SNCV in Ghent); ART on passenger workings, especially the modern bogie ARTs; trams in Greece, Turkey and the Middle East (eg Tunis, Algiers, Aleppo, Damascus); the Indian sub-continent (not Calcutta post-1965); former British Empire systems excluding Australasia; and the Far East including South Korea, Thailand.

**Martin Jenkins**  
37 Station Avenue,  
Walton-on-Thames, Surrey KT12 1NF



For many years, Derbyshire's only operating tramway was on the premises of the National Tramway Museum at Crich. This scene shows Liverpool 'Green Goddess' 869 at Town End. This car is about to return to service after workshop attention. **Richard Buckley**

## PTE approval not needed for private scheme

The news item (page 206, June issue) on developments on Merseyside is misleading. Since the UK Transport Act 1985 Passenger Transport Executives such as Merseytravel have had no powers to operate or provide public transport services in the commercial market place.

The role of Merseytravel in the LETS tram project for Merseyside is exactly the same as it is over the provision of commercial bus services. Indeed, the 1985 Act and EU Competition Directive specifically prevents Merseytravel

from using public money to operate in competition with commercial transport operators.

The decision-making bodies are local councils, who are required as planning authorities to grant planning permission, as was reported in the same issue for the Portsmouth monorail project, which is also being promoted by a private consortium.

The UK Government requires the production of a Local Transport Plan to augment the Unitary Development Plan. The five district councils of Merseyside have asked

Merseytravel to advise them over the LETS four line tramway plans.

LETS does not need Merseytravel to promote or approve its tramway plans. As the first commercially-promoted light rail project in the UK, LETS will demonstrate the headline on your cover 'Trams Cheaper Than Buses' with a high product quality and the ability to attract car trips, which is the cornerstone of the LETS Business Plan.

**Professor Lewis Lesley**  
Liverpool

## Words 'rapid transit' mean just that

I read Mr Mitchell's excellent though frustrating letter in your May issue. It is pointless and counter-productive creating a light rail system which does not link A to B directly, which is not speedy and to which the council is too cowardly to assign traffic-light priority. It is, after all, supposed to be RAPID transit.

Bury to Altrincham is a success precisely because, being ex-railway, it is direct and therefore rapid. New lines that wander aimlessly from A to B via X and Z will fail and deserve to. Other countries have learned this. It would seem that we, being British are unable to. Do we now expect the new line to east Manchester for the Commonwealth Games to take in points north and south as well, besides (of course) stopping at all intermediate traffic lights? What a lunatic country.

**J. Gilbert**  
Herts

## Give us back our Feltham too!

In the June issue, Leo Taylor makes the excellent point about the sorry state of Liverpool 'Baby Grand' 293 at the Seashore Trolley Museum.

Sadly the same thing applies to the London Feltham tram held by Seashore but not mentioned in Irv Cuevas' report. This car (London Transport 2085, Metropolitan Electric Tramways 341, Leeds 526) went to the United States after the Leeds system closed in 1959, and at that time was in working order.

It is no longer on public display, but I am told by an enthusiast who managed to see it a few years ago that it too is rotting away and looked unlikely to ever see the light of day again.

If Seashore does not have the resources or wish to restore this car, perhaps a group in the UK could be found to preserve this most popular type of London tram.

**John R. Prentice**  
Romford, Essex

## Short-term gain

Tom Bell asks: 'Do trams make homes worth more?' Yes, initially, but not long term. When motorists see the advantages of free parking in the side streets around the tram stations, they park:

1. To avoid paying car park fees; and
2. To avoid queuing half an hour to go the last mile into the centre.

Centre car parks lose revenue, residents get annoyed, yellow lines and meters are introduced and residents then have to pay to park outside their own houses. House prices come down again.

**D. Mobbs**  
Purley, Surrey

## Tyne & Wear signals

Geoffrey Skeisey reports that the Tyne & Wear Metro has train-based signalling. However, even the new(ish) system on the Docklands line is not fully train-based. Tyne & Wear is based on conventional lineside interlockings.

**John R. Batts**  
Banbury, Oxon

**! Please write - but please be brief!**

# WORLDWIDE REVIEW

## AUSTRALIA

**MELBOURNE.** The Swanston Trams order for 59 *Combino* low-floor trams will be split between 38 three-section 19-m cars (32 seats) and 21 five-section 29-m cars (52 seats), all 2.65 m wide and double-ended. (SV)

## AUSTRIA

**GRAZ.** The delivery of the first of 18 Bombardier *Cityrunner* low-floor trams has slipped from August to late December. They will be used on route 7. (EB)

**INNSBRUCK.** Plasser & Theurer has delivered a new multi-purpose diesel works car for use on the Igls and Stubaital lines. (EB)

**LINZ.** The 3.6-km tramway extension to Ebelsberg (Ferstrasse) is expected to open in August 2001. Planning has now started for a further 2.2-km extension to Solar-City Pichling by 2003. Plans are also being developed for a 3.2-km extension from Auwiesen to Wegscheid. Work will start this year to build a tram subway under the Hauptbahnhof. This 1.9-km diversion from the existing tram route will cost ATS 930 million, and should be complete by the end of 2003. The 21 Bombardier *Cityrunner* low-floor trams are due for delivery from September 2001 to spring 2005. (SV)

**WIEN (VIENNA).** April saw the delivery of B 634-6 and T 2677/8. Following an accident between articulated tram 4670 and a bus, the undamaged part has been mated with the cab and platform section of withdrawn 4498 to create a new E1 4670.

## BELGIUM

**ANTWERPEN.** Most workings on routes 3 and 15 are now covered by the new low-floor trams. The new terminal loop at Groenenhoek has been completed, permitting work to start on the adaptation of the former depot for museum purposes. BEF 130 million is to be spent on a new reserved track for trams and buses along Bredabaan. (T-2000)

**GENT.** Routes 21 and 22 were extended over the new line to Zwijnaardebrug from 28 May, bringing back into use the former route 5 alignment, closed 35 years ago, and replacing bus route 23. (T-2000)

**INDUSTRY.** Bombardier has announced the closure of its bogie and frame factory in Manage, with the transfer of the work to Brugge and Crespin (France). (SV)

## BRAZIL

**SALVADOR.** Work on the construction of an 11.9-km standard-gauge metro line started on 6 April. 11 four-car trains supplied by Siemens should start operating in 2003. (IRJ)

## CANADA

**MONTREAL.** The metro was shut down for six hours on 15 April by a smoky fire triggered by several explosions that have tentatively been traced to either a defective cable or



Melbourne class B articulated tram 2020 in the new Yarra Trams' livery stands at the new city terminus of route 86 (Bundoora-RMIT), located at the west end of the new La Trobe St extension outside the newly-opened Colonial Stadium, with docklands bonded warehouses in the background. S. Turnbull

a power surge. The closure was the longest in the system's 34 years of operation. Saturday ridership averages about 250,000, and STCUM placed an extra 150 buses into service to replace the trains. 1 June saw the resumption of rush hour commuter rail service on Canadian National's St. Hyacinthe Subdivision between Montreal and McMasterville, reviving a route last operated in September 1988. Initially there is only one inbound and two outbound trains on the 29-km run. During the next year the number of daily peak hour trains should increase to five and the line will be extended further east to St. Hilaire. Agence Métropolitaine de Transport and CN are spending CAD 23.7 million on the project as part of an effort to decrease the number of cars crossing congested road bridges into Montreal. (J. Wolinsky)

**TORONTO.** Articulated tram 4251 has received all-over advertising livery for Starbucks Coffee. (R. F. Corley)

**VANCOUVER, BC.** In May the City Council decided to back the CAD 579 million scheme to extend SkyTrain in subway under Broadway from Commercial Drive to Granville. A six-year transportation plan to ease traffic congestion and support the area's growing population has been approved by TransLink's Board. It provides CAD 1100 million to expand public transit in the Vancouver region but just CUD 333 million for new roads. The rail component includes nearly CAD 100 million towards SkyTrain expansion plus the purchase of more

cars and a sixth train for West Coast Express commuter rail service. The Strategic Transportation Plan also calls for CAD 190 million to be spent on road maintenance and upgrades but CAD 3 billion for operations, mostly to run transit systems. To pay for the program, a transit fare increase is to take place on 1 June with another planned for 2003. There will also be a new levy on motor vehicles beginning in October 2001. The Greater Vancouver Regional District must ratify the plan before it is officially adopted. (J. Wolinsky)

## CZECH REPUBLIC

**BRNO.** The centenary of electric tramways this year was heralded by the painting of KT8 1724 in all-over white with appropriate lettering and graphics. Preserved car 107 and trailer 215 work a special service 100 between Svobody nám and Pisarky until 24 September, 14.00-22.00 on Saturdays and 14.00-18.00 on Sundays (not 26/27 August), at a special fare of CZK 20. A chartered run of steam tram engine 'Caroline' through the streets on 14 May had to be cancelled because city authorities were concerned at the fire risk. (L. F. Folkard)

## DENMARK

**KØBENHAVN.** 1 July sees the creation of a new organisation Hovedstadens Udviklingsråd (HUD) to take over ownership of the light railways in north Zealand (Helsingør-Gilleleje, Lyngby-Naerum, Gribskovbanen, Hillerød-Hundested) from 1 January 2001. ('Ligeud'

## ECUADOR

**QUITO.** On 30 April the trolleybus line was extended 5 km south to Avenida Morán Valverde. The extension is unusual in that trolleybuses operate left-hand running in contraflow to car traffic to permit passengers to board and alight from central platforms. Construction is due to start on a 6-km extension to the airport. (A. Morrison)

## FRANCE

**ANGERS.** This city of 160 000 has produced plans for three rubber-tired 'tramway' lines to be built by 2013. (VdR)

**BAYONNE-SAN SEBASTIAN.** It is proposed to upgrade the Bayonne-Hendaye local rail service to rapid transit standards, with 14 additional stops, and introduce through working with the existing Spanish light railway linking Hendaye and San Sebastian. Studies should be completed in time to permit the project to take shape in 2003-4. (VdR)

**LA CIOTAT.** Plans have been unveiled for a 5-km tramway to link the port with the SNCF station using industrial rail tracks closed in 1988 (which were served by trams in 1888-1955). It is proposed to purchase second-hand trams from Germany and start service in December 2001. (VdR)

**MULHOUSE.** A project management contract for the tramway scheme has been awarded to Transdev subsidiary Transamo. It is hoped to open the system before the end of 2004. (TP)

**PARIS.** 800 metro cars are to be



ordered before the end of the year to provide 160 new trains for lines 2, 5 and 9 in 2005-15. (VdR)

**RENNES.** The first tracks have been laid for the VAL line and the first of 16 Matra trains is expected to be delivered at the end of July. Commercial service is planned for early 2002. (VdR)

**ROUEN.** Completion of the *Teor* guided busway project is delayed by a year to late 2001 after a legal challenge to the award of a contract for the city centre section. (VdR)

**VILLEFRANCHE-LA TOUR DE CAROL.** SNCF has invited bids for new rolling stock for this metre-gauge electric light railway. (RGI)

## GERMANY

**BIELEFELD.** The 3.1-km of new tramway linking the city centre (Rathaus) with Universität (1.9 km in subway) was opened for use by route 4 on 2 April. The current terminus is provisional and the permanent station Universität should open in mid-2001. A year later the line will be extended by 1.5 km to Lohmannshof. The city council has now decided to re-instate the project for a 3-km extension of route 3 from Babenhausen-Süd to Theesen (DEM 52 million). (SV)

**BREMEN.** The 3.5-km extension of tram route 4 from Horn-Lehe to Borgfeld is to be built in 2001/2 at a cost of DEM 75 million. It is hoped to further extend the line to Falkenberger Kreuz by 2004. (SV)

**FRANKFURT/MAIN.** The new timetable at the end of May saw route 12 extended from Hbf to Schwanheim, route 21 switched from Schwanheim to Stadion, and route 19 curtailed to operate Westbahnhof-Hbf. Plans are being progressed to extend *Stadtbahn* line U2 from Gonzenheim to Bad Homburg Bhf in 2006-8. Dual-voltage rolling stock would be introduced at this time to permit through operation over DB tracks. (HOV, SV)

**FREIBURG/BRSG.** Five *Combino* trams (271-5) were in service on route 1 in early June. 1971 eight-axle trams 201-4 have been withdrawn from regular service and are likely to be sold to eastern Europe. (A. Kaufhold)

**HALBERSTADT.** Trams resumed using the depot from 20 April after the relaying the access fan. (C. T. Wagner)

**JENA.** 14 more low-floor trams have been ordered from ADtranz, with an option for a further five. They will arrive in 2002, to replace the 40-year old Reko two-axle trams. An extension

is planned to run north from Zwätzen to a new housing area. (HOV)

**KASSEL.** The DEM 17 million project to upgrade the Kassel-Naumburger Eisenbahn for light rail operation will reach its next phase on 1 June 2001 when routes 4 and 8 are extended from Kaufungen to Helsa.

**LUDWIGSHAFEN.** S-Bahn construction work has caused the following route changes for three years:

6, Rheingönheim-Pfalzbau - Ludwigstrasse-Rathaus-Mannheim Neuostheim;

10, Friesenheim-Hbf-Berliner Platz;

11, Friesenheim-Rathaus-Pfalzbau-Luitpoldhafen.

This leaves Berliner Platz-Schützenstrasse without service. A temporary turning circle has been created at Berliner Platz. Routes 10 and 11 interwork. (F. Muth)

**NORDHAUSEN.** The first 19-m *Combino* low-floor tram (101) was delivered in May and entered service on 2 June. At the same time Bochum KSW tram 96 arrived to take part in the centenary celebrations. Work is almost complete on the conversion of

GT4 72 to dual power by the installation of a diesel generator set to provide 600 V dc to the traction motors on non-electrified lines. Livery is pale green with blue trim and white window surrounds. (C. T. Wagner)

**NÜRNBERG.** For several weeks from 31 July the U-Bahn viaduct between Nürnberg and Fürth will close for repair, trains terminating at Eberhardshof. Three sets will maintain a shuttle service within Fürth. (SV)

**SAARBRÜCKEN.** A referendum produced a 52% vote in favour of the extension of the *Stadtbahn* through Riegelsberg along the B268 main road, and planning procedures are now in progress to permit construction through to Lebach to take place in 2002-4. (SV)

**STUTTGART.** The new (third) *Stadtbahn* depot at Remseck-Aldingen was opened on 10 May. From 28 May it

serves routes U1, U13 and U14 with 20 DT8 cars. Completion in 2004 will see a further 20 cars allocated here. Plans for the regauging of route 2 are: May 2002, standard-gauge U2 from Hauptfriedhof to Berliner Platz with temporary bus service Berliner Platz-Hölderlinplatz; September 2002, extension of U2 to Hölderlinplatz; 2005, U2 Neugereut-Steinhaldenfeld-Hauptfriedhof-Hölderlinplatz. Thus GT4 trams will be withdrawn in May 2002. (G. Wandel)

## HUNGARY

**BUDAPEST.** On 29 May route 23 was cut back to Ferenc körút - Üllői út. The Üllői út - Baross tér section was eliminated, in connection with the construction work for the extension of route 1 on the Outer Boulevard. As a result, tram traffic in Vajda Péter utca has ceased after almost a century. Tram traffic will continue to be maintained on Fiumei út by route 24. In November, the rest of route 23 will also be abandoned. On 15 December route 1 will be extended on the Outer Boulevard all the way to the Pest bridgehead of the Lágymányos Bridge, creating a complete semi-circular route around Pest. On the same day a short-turn route 1A, between Bécsi út and Üllői út (Népliget), will be introduced. (G. Sandi)

**SZEGED.** Three tram routes operate in this south-east Hungarian city:

- 1, Szeged pu-Rókus pu;
- 3, Dugonics tér-Postás Sporttelep;
- 4, Kecskés-Tarján.

In addition there are short-workings 3A (Dugonics tér-Vadaskert) and 4A (Centrum Áruház-Tarján). Route 1 is worked almost entirely by Tatra T6 trams 900-912, while routes 3 and 4 use the four-axle articulated trams of series 658-62 and 801-20. Fares were increased from 1 January and a single ride now costs HUF 105 on the car or HUF 79 in advance. Daily/weekly tickets cost HUF 285/860. (G. D. Smith)

## INDIA

**CALCUTTA.** The rapid transit link to Kolkata airport is to be provided by a 3.8-km elevated rail branch from Dum Dum rather than a metro extension. It is expected to open in late 2001. (RGI)

## ITALY

**BRESCIA.** Tenders are invited for an 18-km automated light metro estimated at ITL 1.1 300 million. (IRJ)

## JAPAN

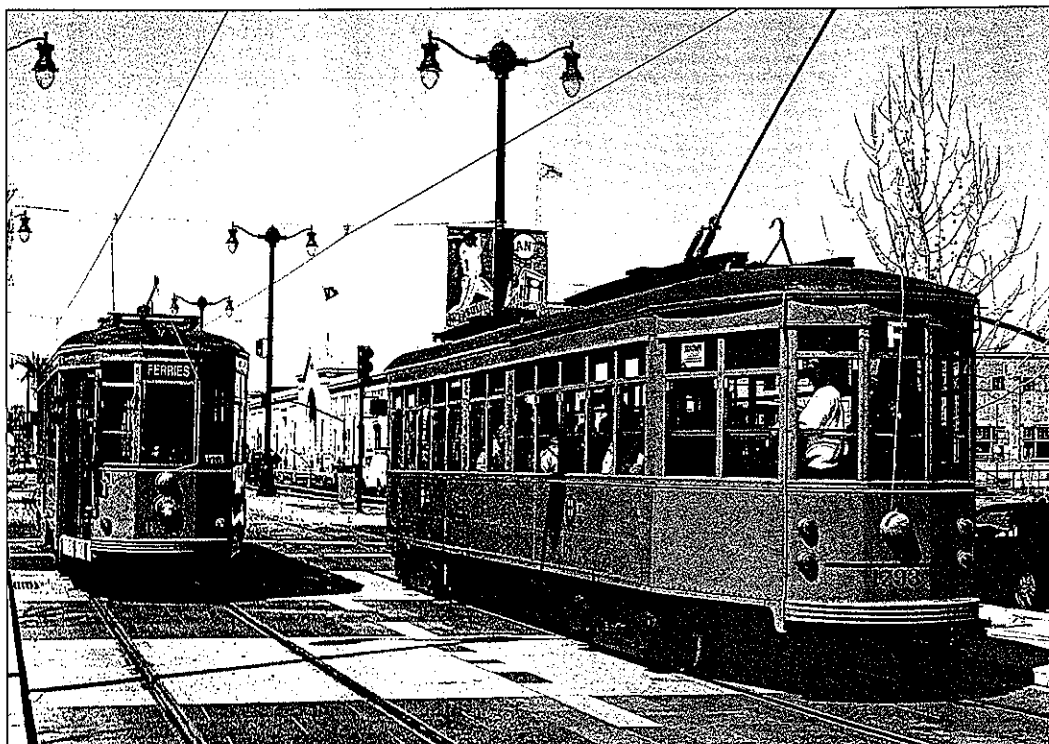
**TOKYO.** Toei metro line 12 was extended (2.1 km) from Shinjuku to Kokuritsu Kyogijo (National Stadium) on 20 April. A line is due for completion in December. (O. Abe)

## NETHERLANDS

**AMSTERDAM.** In readiness for the start of construction work on the north-south metro, the tram station at Centraalstation for the Damrak routes is being moved to the site of the bus station. Diversions will also take place this summer along Weteringcircuit to permit construction of the underground station Vijzelgracht. The tram and bus parade planned for 16 September will start from Rozengracht/Marnixstraat at about 12.30 and follow the route Rozengracht-Radhuistraat-Nieuwezijds Voorburgwal-Martelaarsgracht-Prins Hendrikplantsoen-Damrak-Dam-Rokin-Munt-Vijzelstraat/gracht-Weteringcircuit-Fredinand Bolstraat. Trams 725 and 739 have been scrapped. 780-816 are visiting the workshops in turn to have asbestos removed. New line and destination indicators are being installed on metro trains, in connection with the adoption of line colours: 50, green; 51, orange; 53, red; 54 yellow. In addition to the national *strippenkaart* system, GVB sells Amsterdam-only single (2-hour), return and day tickets for NLG 4/7/11 respectively. (OR, GVB)

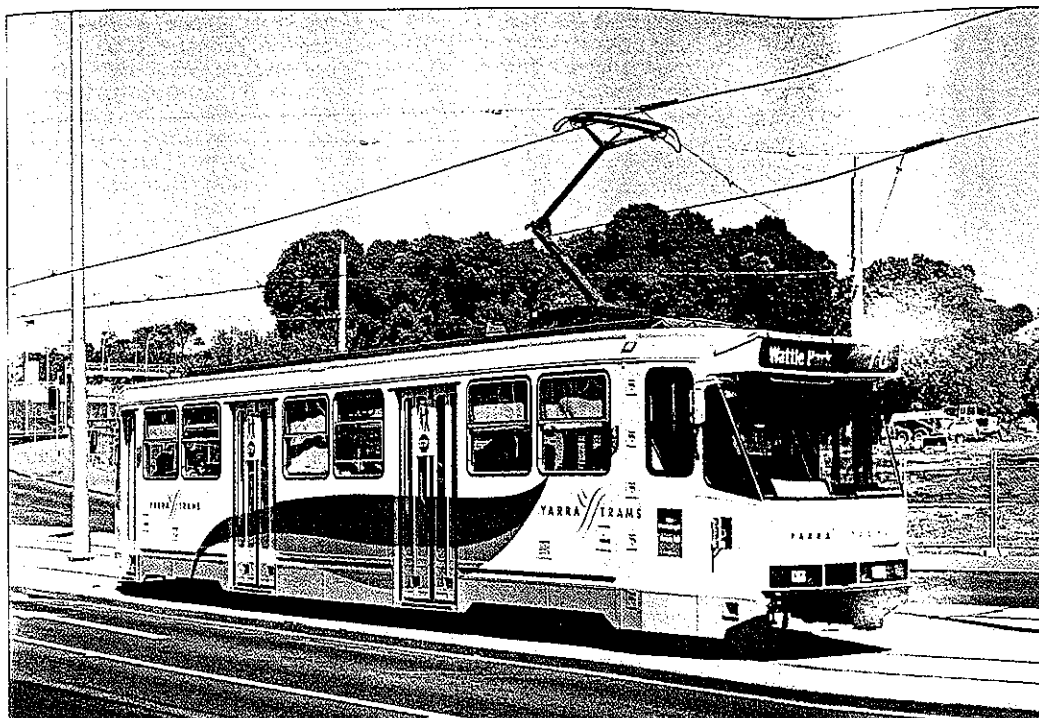
## Nice decides on trams

After 15 years of debate the French city of Nice decided on 28 April to build 37 km of steel wheel tramway over 15 years, as part of a strategy to increase the modal split for public transport from 11% to 30%. An 8.5-km north-south line should be built in 2002-2005, followed by a 17.5-km east-west line in 2007. Extensions and a second north-south line will complete the system in 2015. The first phase is estimated to cost FRF 1200 million.



At first glance another Milano view, but these are ex-Milano Peter Witt cars passing near the Ferry Building on San Francisco's Embarcadero waterfront, where they now supplement the PCC cars of route F. Pete Ehrlich





Melbourne tramways are franchised to two different operators, and Yarra trams is the first to introduce a new livery as demonstrated by a class A tram on route 70. As with so many 'designer' liveries, the operational need for a legible fleet number has been ignored. D. R. Keenan

**DEN HAAG.** New route 17 has become a success story, with 12 000 passengers/day using it. The HTM tram network carried 83 million passengers in 1999 (buses 37.4 million), but fare avoidance is running at about 7.5%. The re-opening of tram tracks along Grote Marktstraat will take place on 18 November, to coincide with the arrival of Santa Claus; routes 2 and 6 will commence normal service the following day. PCC 1329 is being overhauled before despatch to a museum in Washington, DC (USA). (HOV)

**ROTTERDAM.** On 6 April the city council decided to go ahead with an 11-km TramPlus link to Carnisselande via Groene Hilledijk, Dordtsestraatweg, Slinge and Langenhorst. It is hoped to complete work in 2003. The start of tourist tram route for Euro-2000 visitors was postponed from 15 May to 3 June; route 10 takes over on 8 July. Delivery of new metro trains was completed with the arrival of 5341/2. From the first series metro trains, only 5001/6/17-19/22/4/52/3/5/8 remain in service. Amsterdam has inspected withdrawn stock to consider a purchase. (HOV)

## NORWAY

**BERGEN.** Referring to our May report, the city council still owns a share of

bus company formed from the merger of Bergens Sporvei and Pan Trafikk. Financing for the planned NOK 2000 million light rail line to the airport is expected to come in part from the introduction of road pricing (NOK 10 to enter a cordon around the city on weekdays 06.00-22.00) and in part from a central government grant. Further information can be found at [www.vp.no/lrtbergen](http://www.vp.no/lrtbergen). (Tom Potter)

## PHILIPPINES

**MANILA.** A further 12 LRVs are to be ordered to increase capacity on light rail line 1, and ATC will be introduced to reduce headways. (RGI)

## POLAND

**POZNAN.** Ex-Frankfurt six-axle Düwag cars up to 613 were noted in service in March, together with ex-Düsseldorf eight-axle cars up to 671. 102Na tram 20 has become driver-training car 2000. (L. F. Folkard)

## PORTUGAL

**PORTO.** Trams running in mid-May were 205/13/6/22 and 271/87, plus coal trams 58/77. The Massarelos to Carmo line is out of use (the overhead and some track is removed). Only service 1E Infante-Boavista operates. (M. Lawrence)

**SINTRA.** The sale of the Sintra tramway by Stagecoach to Sintra

Council was expected to be concluded in June. This lengthy process has delayed the start of work on the extension from Ribeira to the new terminal in Sintra. A public/private company (with the Council owning the majority of the shares) was formed on 23 May to take responsibility for urban public transport projects in and around the historic centre of Sintra, and unveiled plans for an ambitious large-scale project to improve road and transport access, including pedestrianisation of major thoroughfares, three major car/coach parks (each with a public transport interchange) and two new access roads. The company will operate the tramway, the car parks, and a new aerial cableway to a Swiss Chalet style resort at Santa Eufémia. It is envisaged that a low-fare single ticket covering all forms of transport will be adopted, using subsidy from the car parks' income. The new company is not yet ready to take up operation of the tramway and Stagecoach will remain the operating company until the end of September. The first public service over the line this year started with the introduction of the summer timetable on 27 May, with trams operating Wednesday-Sunday until 17 September, then on Saturdays and Sundays only. Departures from Ribeira are at 11.35, 14.05, 15.35 and 17.05, returning from Praia das Maças 44 minutes later. A new tramway museum will be established at Ribeira in the former power station building, and a 200-bed hotel will be built on the hillside above the depot, together with a themed restaurant and small commercial centre in the former staff quarters. The proposal to construct a funicular railway from Ribeira up the steep valley which leads directly to Sintra has been abandoned.

## SPAIN

**BARCELONA.** A 25-year concession has been awarded to Group TramMet to finance, design, build and operate 16.8 km of tramway along Diagonal to Boix Llobregat. ESP 25 800 million of the ESP 36 000 million cost will come from *Autoritat del Transport Metropolita* with support of the Catalunya regional government and the city council. GroupTramMet is a consortium led by Alstom, which will be responsible for project management, electrical and mechanical work and the supply of 19 or 20 30-m Citadis low-floor trams. CGEA Transport will be the operator. Civil engineering will be carried out by Spanish companies. Finance will come from Banasabadell and Société Générale. Work will start in 2001, for completion in 2003. The line is expected to carry over 19 million passengers/year. From 1 January 2001 the greater Barcelona area will have a unified fare structure for all public transport, with six zones (zone 1 will cover the city area). Tickets will be valid for 75 minutes unlimited travel. To mark the 75th anniversary of metro operation, three-coach train M301/6/8 has been restored to original 1923 condition for special trips. (J. Ibanez, R. Felski)

**MONTSERRAT.** The rack railway to the monastery is to be rebuilt and an adhesion link installed at Monistrol to reach the FGC station. Five GTW2/6 cars have been ordered from Stadler/ADtranz. (EA)

**SOLLER.** Ex-Bilbao tram set 4+7 has been withdrawn and will be transferred to the mainland at Ejea de los Caballeros for restoration. 4 will be displayed in Soller condition in Azpeitia, but 7 will be restored to Bilbao condition using a metre-gauge truck from Valencia, and may appear at the opening of the new Bilbao tramway. In May the 30-minute service was being worked by 1913 cars 1 and 2 plus the four toastrack trailers 8/10 and 9/11. Until 7 May the hourly evening service used ex-Lisboa car 22, but in the summer 1 or 2 is used. Ex-Lisboa 20/1/3 are also available and CCFL 734 is stored. It is believed the toastrack trailers do not date from 1913, but were built about 1890 as mule cars for the Palma tramways, passing to the Soller line on electrification in the 1920s. (J. Ibanez, V. A. G. Willins)

**VALENCIA.** 18 trailer cars have been ordered from Alstom to add capacity to metro line 3. (IRJ)

## SWITZERLAND

**BASEL (BVB).** Further trailers rebuilt with low-floor sections are 1456/94/5 and 1501. The pantograph design for the new Combis is being tested on car 477. ('tram')

**BASEL (BLT).** 1301-3 are ex-VBZ trailers 801/799/800, 1304/5 ex-BVB 1404/8 and 1306-8 the ex-Bern trailers. Work has started to double-track the last single track section of route 11, in Münchenstein. ('tram')

**BULLE-CHÂTEL-ST-DENIS (GFM).** Be4/4 116 has received a new steel body matching the 1905 style and painted in CEG (*Chemins de fer électriques de la Gruyère*) livery, which disappeared in the 1942 merger. (EA)

## Hong Kong growth continues

The Second Railway Development Study, published on 16 May, sets out plans to bring 70% of the population of Hong Kong within 1 km of a rapid transit station, increasing rail's share of public transport trips from 31% to 46%. New lines due to open in the period 2008-15 include the KCR West Rail link from Nam Cheung to Tsim Sha Tsui, meeting the extension of East Rail from Hung Hom; the West Rail extension to the zonal border at Lok Ma Chau; the extension of the MTR Island line from Sheung Wan to Kennedy Town, and a new North Island line running from North Point to Central via Exhibition and Tamar. The major project is the MTR East Kowloon line from Diamond Hill to Hung Hom, then under the harbour to Exhibition and Admiralty. MTR is also to build a 3-km shuttle line between Yam O on the Tung Chung line and the Penny's Bay Disney theme park on Lantau Island.



## Dutch to invest millions to crack traffic congestion

On 19 May the Dutch cabinet formally approved an NLG 11 000 million for a 10-year plan to alleviate congestion in Holland, including the implementation of road pricing. There are financial guarantees for the construction of RandstadRail linking Rotterdam and Den Haag, including a flyover near Den Haag CS to segregate Zoetermeer light rail from NS lines, and for expansion of Den Haag light rail under the AggloNet project. The 40-km Zuidtangent busway between Amstelveen, Schiphol and Haarlem should be converted to light rail in 2007-8. Also included is financing for the Leiden-Alphen-aan-den-Rijn tram/train project. Amsterdam will get money to expand its future north-south metro (and bring forward the opening from 2009 to 2007). Utrecht will get an S-Bahn-type service, mostly over NS tracks, but partly on dedicated new track and with an underground station under Utrecht CS.

**LAUSANNE-BERCHER (LEB).** On 28 May the LEB light railway was extended from its temporary underground terminus at Chauderon to the new terminus at Flon, providing interchange with the Ouchy 'metro' and the TSOL tramway. (A. F. Reekie)

**LUZERN-LENZBURG (SBB).** The roadside Seetalbahn is to be re-equipped with 17 GTW2/6 low-floor articulated cars from Stadler/ADtranz at a cost of CHF 100 million. The same stock will interwork on the Aarau-Brugg and Brugg-Muri lines. (RGI)

**ZUG.** Subject to approval this year by the Regional Council, the first section of the planned Stadtbahn will be inaugurated in 2004, over SBB tracks between Cham and Baar, with a 15-minute service provided by rapid transit cars. ('tram')

**ZÜRICH.** The CHF 235.5 million order for a further 58 Cobra low-floor trams from ADtranz has been confirmed, bringing the total due to 75; the first is now due for delivery in spring 2001. There is also an option for a further 22. The first six cars are under construction at Pratteln, but with closure of this plant planned, series production will take place at another Swiss site, to be announced. A study is being carried out for a

350-500 m extension of route 6 to a new Zoo terminus. A cable-operated Poma/Otis shuttle is to be installed at the airport to provide a link to a new terminal. (SV, 'tram')

## TAIWAN

**KAOHSIUNG.** On 10 May the Department of Mass Rapid Transit awarded a NTD 172 300 million metro construction contract to a consortium including China Steel, Siemens and Taiwanese civil engineering contractors. It is hoped to start public service on the 42.7-km system in 2005. (RGI)

## TURKEY

**ISTANBUL.** The first section of metro is due to be opened in August. Work on the light rail extension to the airport is expected to be completed by the end of 2000. (Rifat Behar)

**İZMİR.** The public service on the light rail line was inaugurated in May. (Rifat Behar)

## USA

**BALTIMORE, MD.** On 7 June a USD 22 million contract was awarded for a full-size workshop and depot to be built at Cromwell light rail terminus, expanding the limited facility already there. This will permit

service to be maintained during interruptions caused by the double-tracking project affecting the North Avenue depot. On 10 May AAI Corp. was awarded a USD 80.6 million contract to refurbish all 100 of the MTA's metro cars over the next three years. The vehicles will also be upgraded with electronic message signs, audio warnings that will signal when doors are about to close, new floors and more comfortable seats. Weekday ridership on the subway now totals about 50 000. (C. Lietwiler, J. Wolinsky)

**BOSTON, MA.** A special commission appointed by the Massachusetts Transportation Secretary has recommended raising the subway fare from USD 0.85 to USD 1, adding a USD 1 increase on all commuter rail fares and raising the bus tariff from USD 0.60 to USD 0.75. This is not expected to have much of an effect on the system's weekday ridership of 1.2 million since Boston has the lowest big city rapid transit fares in North America. The proposal must be passed by the MBTA board. The additional USD 35 million that will be collected each year will help improve the agency's low farebox recovery rate and provide badly needed additional revenue. Additional funds could come from car park rate increases and personnel cutbacks. The committee also recommended two more fare increases of almost 10% each on 1 July 2003 and 1 July 2005. (J. Wolinsky)

**CAMDEN-TRENTON, NJ.** Ceremonies marking the official start of construction on the 46-km Southern New Jersey Light Rail Transit System were held May 8 in Camden. Instead of turning the traditional shovelful of earth, the governor used a backhoe to pick up a lump of dirt on the site of a future station, located adjacent to the Delaware River. The 20-station former Conrail freight line, using 20 Swiss-made diesel-electric light rail

cars from ADtranz, is scheduled to open in December 2002. Officials are predicting 4500 daily riders, a number that is expected to double within a decade. The design-build-operate contract has been awarded to the Southern New Jersey Rail Group, a consortium led by Bechtel. The total cost will be more than USD 800 million, all of it from the state, with USD 451 million needed just for design and construction. Freight service will continue but only during overnight hours when passenger trains are not running. Still under study is a short extension through downtown Trenton to the State House area. (J. Wolinsky)

**DALLAS, TX.** 16 September will see the extension of the Dallas-South Irving Trinity Railway Express commuter rail service to Fort Worth (Richland Hills). The Dallas region is planning to bid for the 2012 Olympics, and the North Central Texas Council of Governments has proposed spending USD 1000 million for light rail and other transportation projects. LRT lines would be built as part of the region's overall transit improvement programme and not just for the games. Although details are still lacking, an estimated USD 300 million would be needed for rail projects, including LRT serving Arlington and Grand Prairie, an expansion of the Trinity Railway Express commuter system and adapting some freight railways to carry passengers. A decision on the 2012 games is expected to be announced by the International Olympic Committee in 2005. On 9 May the DART board of directors completed route selection for the proposed light rail extension to Pleasant Grove. The trains will utilise an existing rail line instead of travelling along congested Lake June Road, saving about 27% in construction costs. The remainder of the South-East route, which will cost approximately USD 450 million, was chosen on 8 February. It is scheduled to open by 2008 and will serve Deep Ellum, Baylor University Medical Center and Fair Park in addition to Pleasant Grove. DART now has USD 2900 million in new LRT lines under construction or planned.

(C. Lietwiler, J. Wolinsky)

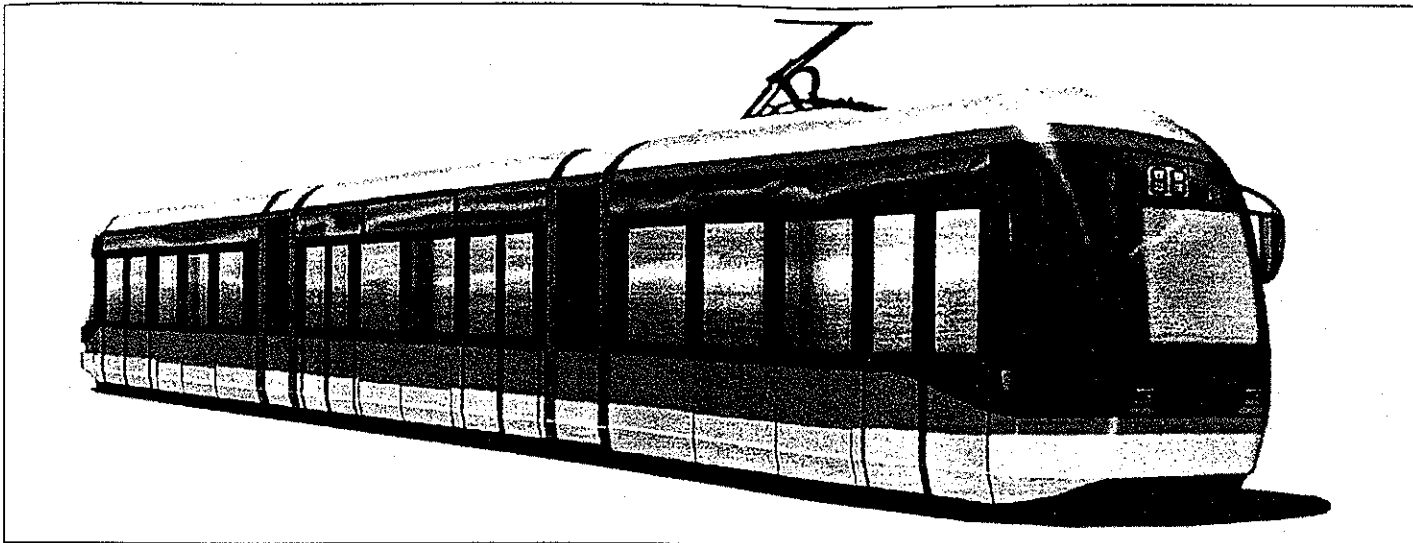
**DENVER, CO.** The dispute over twelve allegedly defective bridges along the 14-km light rail extension along South Santa Fe Drive to Littleton has been resolved and the line will open on 14 July as scheduled (the first test train ran on 25 April). The contractor will pay the USD 50 000 cost of repairs. Ballast, rail and sleepers will be removed from those spots where the concrete was too thin and 10x15 cm steel reinforcement tubes will be installed on the deck, adding extra strength and distributing the load over the girders more evenly. Construction work should start later this year on the Central Platte Valley line, for completion in 2001. RTD and Colorado DoT are soliciting expressions of interest for the South-East corridor light rail/highway project, including 30 km of light rail and 27 km of Interstate highway, all to be completed in summer 2008. (J. Wolinsky, C. Lietwiler)

**HOUSTON, TX.** In a move that



Manila's first light rail line is 16 years old, and the Belgian-built articulated cars are undergoing mid-life refurbishment. A two-car set displays the new livery as it follows the elevated alignment above the continuous traffic jam of UN Avenue. Walter Rice





An artist's impression of Russia's first low-floor tram, the PTV-2000 design being developed by the Sankt Peterburg undertaking's factory TMZ with help from other local high-tech enterprises. *TMZ*

stunned civic leaders, an influential conservative congressman from Texas moved to block all federal funding for Houston's LRT project, a move that could be its death knell. Tom DeLay, the majority whip and third-ranking Republican in the House, inserted language into the 2001 Transportation Bill to prohibit any grants "for planning, design or construction of a light rail system in Houston." DeLay's action came on 8 May during a meeting of the House Appropriations Subcommittee on Transportation as it began marking up the bill. Also included in the measure is a section blocking the transfer of USD 65 million set aside for construction of an HOV lane to the proposed 12-km Main Street corridor light rail line. DeLay said he is stopping the flow of money because he is not satisfied with the MTA's handling of LRT planning and because he perceives a lack of consensus on the issue. MTA officials vowed that somehow the needed funds to build the line would be obtained, possibly with the help of a public-private partnership. Also, other politicians have vowed to fight for a reinstatement of the funding.

Pressure appears to be building for a light rail extension from downtown to north Houston more than a year before construction starts on the Main Street corridor starter line. The North Corridor Coalition, which was formed to lobby for LRT, hosted a meeting on 24 April attended by MTA and city officials, many of whom said they favoured the project. Other areas are also starting to recognise the value to rail transit and are starting their own campaigns. The MTA board is expected to decide in August which routes deserve priority and could decide the tentative order in which they should be built. Transit agency President Shirley A. DeLibero also said she thinks the North Line could be first but added hopefully that several projects could get underway simultaneously, although she listed a line to the regional airport as a priority. *(J. Wolinsky)*

**JERSEY CITY, NJ.** New Jersey Governor Christine Todd Whitman officiated at the dedication of the Hudson Bergen light rail system's

initial operating segment on 15 April. Despite rainy weather, hundreds of people joined a slew of politicians and NJ Transit officials for the ceremony and to take free rides. Regular operation between 0530 and 0100 began on 17 April initial weekday ridership was expected to be 9000. However by 1 June only 4158/day were being carried. *(J. Wolinsky, C. Lietz)*

**LAS VEGAS, NV.** A decision on whether to build the controversial 6.1-km monorail transit system in Las Vegas could be made in late June. The USD 600 million, privately-financed development has already suffered lengthy delays, in part because the state has yet to decide if it will issue tax-free bonds to finance the project. About USD 328 million would actually be used for pay for the work, with the remainder set aside for debt service, interest, taxes and unforeseen eventualities. Repayment would come from fare-box and advertising revenues; taxpayers would bear none of the risk. Planners have even set aside USD 5.5 million to tear down the elevated structure if the monorail is a financial failure. State and county officials have also been waiting for final cost and financing figures, and these have now been delivered. The estimated average fare has been increased from USD 2 to USD 2.50 because higher interest rates have made borrowing more expensive. Opposition is coming from a homeowners group and the owner of two major casino resort-hotels, who reportedly is financing much of the negative ridership and cost data being generated by known rail transit foes. *(J. Wolinsky)*

**LITTLE ROCK, AR.** The price tag for phase one of Little Rock's proposed 3-km River Rail tram project has risen from USD 10 million to between USD 11.5 million and USD 13 million, due to a more expensive method of placing rail on the Main Street bridge being found to be necessary. The Central Arkansas Transit Authority had planned to use conventional techniques on the bridge deck but found it might be unsafe. Instead, concrete sleepers will be glued to tiles fastened along a

sidewalk. Rail would then be attached to the sleepers. CATA plans to submit its final design to the state Highway Department during May for approval and a permit. But if the county can acquire the bridge from the state, permission will not be required. The transfer appears to have a good chance of going through because the bridge does not connect to any state highways and is thus better suited to local control. A second phase could extend the tramway to the planned Bill Clinton presidential library. CATA, which so far has accumulated USD 8 million for the first segment, may seek private sector funding, including corporate grants, to make up the shortfall. The current schedule calls for the award of track work, power and bridge construction contracts in August and the first trams to arrive in July 2001. Revenue service would begin that autumn. *(J. Wolinsky)*

**LOS ANGELES, CA.** April patronage on the rail systems created new records with average boardings/day as follows: Red Line 68 500, Blue Line 61 675, Green Line 24 850, Metrolink 30 365. Stations on the Blue Line are to be extended to accommodate three-car trains in a USD 9.7 million project that will be completed in phases during late evenings. The existing Green Line cars will switch to the Blue Line, and the Green Line will receive 17 of the new Siemens cars. The Riverside County Transportation Commission is again seriously considering an extension of the Metrolink commuter rail system to the outlying communities of Perris and possibly San Jacinto. A new study has shown operating costs for four return trips a day between Perris and Los Angeles Union Station via Fullerton would require USD 1.3 million in annual subsidy. The Commission's share would be USD 860,000, a sizeable increase from the USD 3.3 million it is paying for existing service. Construction costs for the Perris segment are estimated at USD 45 million to USD 61 million, much of which would be used to upgrade track and signals. The consultant's report contends an extension to San Jacinto would attract 1,300 new weekday riders, ultimately

lowering the county's per-passenger subsidy. *(J. Wolinsky)*

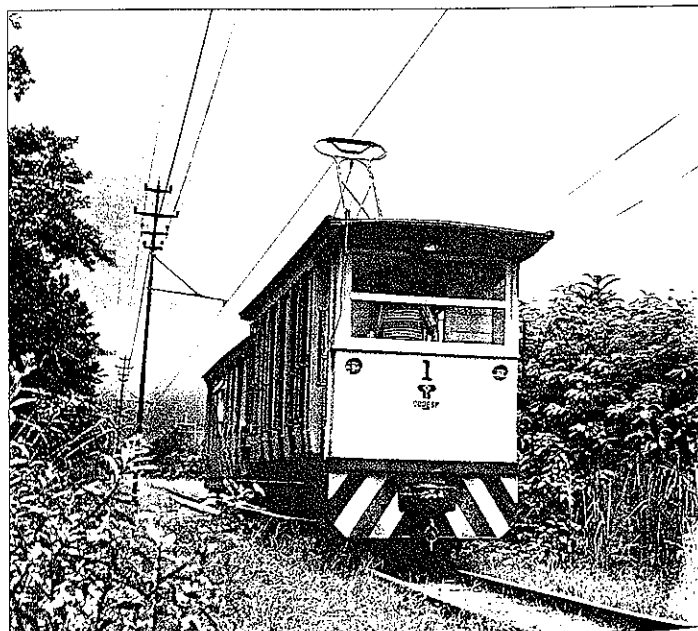
**LONG BEACH, CA.** A Request For Proposals was released the first week in May for track refurbishing and traction power on an 2.7-km, four-station streetcar line in San Pedro. The project was announced by the L.A. Harbor Department last July and progress since then has been swift. Historic Railway Restorations of Seattle was hired to design a replica of the Pacific Electric's 500-series cars, a job that is now in the engineering design phase. Meanwhile, other materials needed to construct two cars have been ordered. They will be built in a former Seattle warehouse where five Spanish-designed Talgo intercity tilting trains were assembled for Amtrak two years ago. The cars will ride on Taylor motor trucks from retired Boston Blue Line cars, four of which (plus a spare motor) have been purchased from the Seashore Museum in Kennebunkport, Maine. These will be married to mine locomotive control equipment. In addition, the Harbor Department has obtained the body of PE 1058, which had been mounted on rubber tires and exhibited around southern California by a private owner. It will be placed on Japanese interurban streetcar trucks also obtained from Seashore. Department spokesman Bob Henry said he hopes the trackwork and wiring can be completed by October and that the new replica streetcars will be delivered in December or January, when revenue service will begin. The line will start at the Catalina Ship Terminal and end at 22nd and Miner Streets, with stops at the World Cruise Center, Harbor Boulevard and Sixth Street, and Ports O'Call Village. Officials are hoping the trams will attract cruise ship tourists and those visiting Port's O'Call, a reproduction of a quaint seaport, to visit, eat and shop in downtown San Pedro. The line, formerly used to haul coal to the harbor, will continue to see limited freight operations during late night hours. A 2.4-km extension to the Cabrillo Marina is under consideration. Pacific Harbor Lines, the freight operator, will run the trams and the fare is expected to be USD 1 for four hours of unlimited riding. *(J. Wolinsky)*





# WORLDWIDE REVIEW PICT

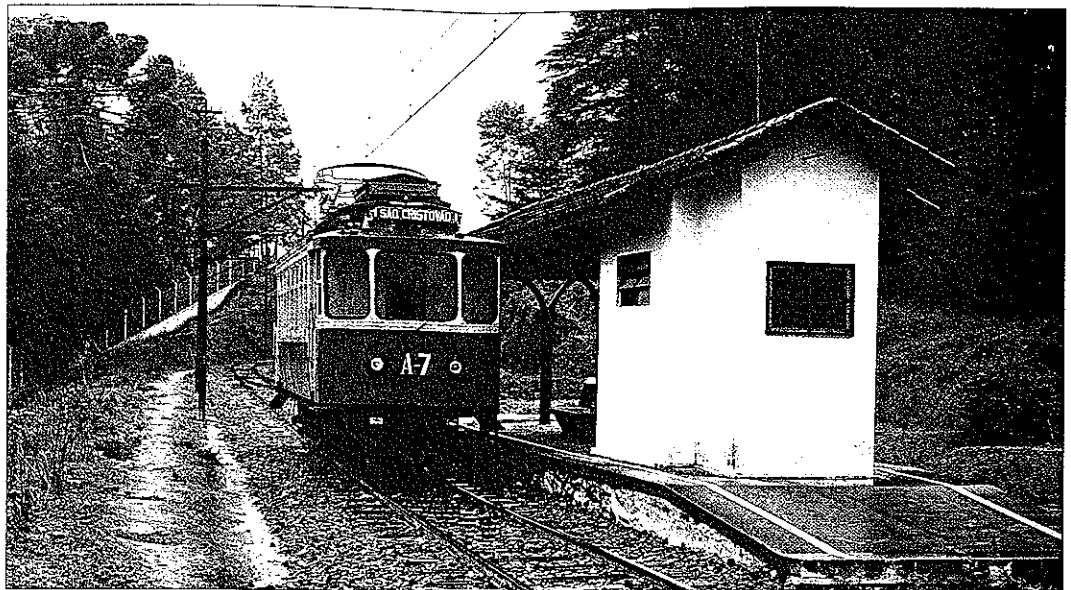
South America's largest country is well-known in traction circles for its Carioca tramway and Corcovado rack line in Rio de Janeiro, as well as metros in that city and Sao Paulo. American member **Jack May** has travelled on other interesting lines, including the long interurban from Pindamonhangaba to Campos de Jordao (with its 'urban' tramway operation), the rather special line on the island of Itatinga and heritage tramway in Campinas.



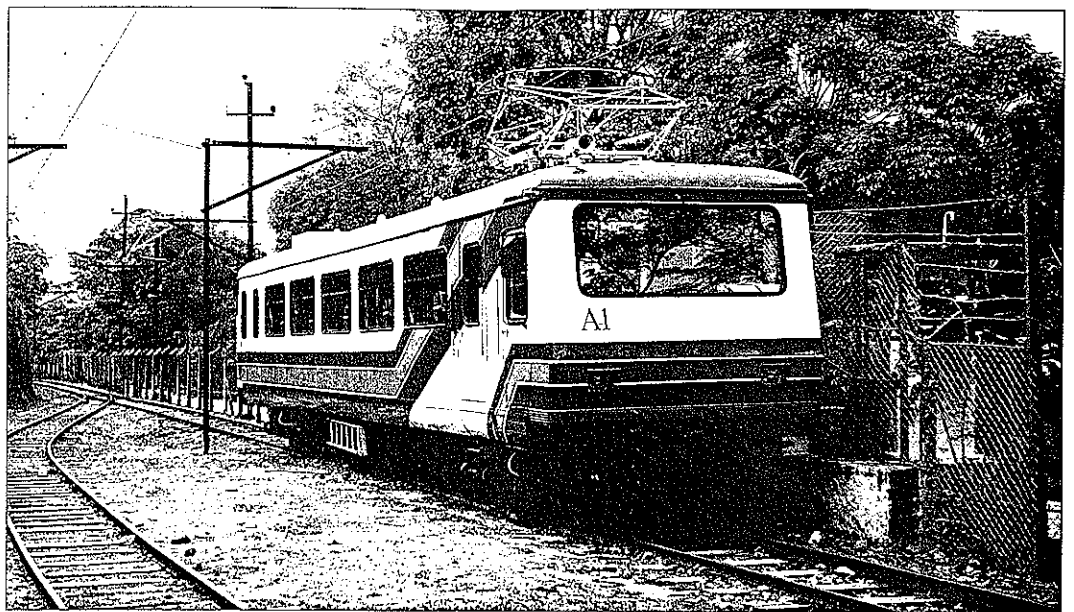


Above: Campinas car 1 is one of four Brill-built trams that operate on weekends and holidays on a 4-km long loop around Lagoa Taqueral in Parque Portugal. The city discontinued its trams in 1968 only to bring them back to this popular line four years later.

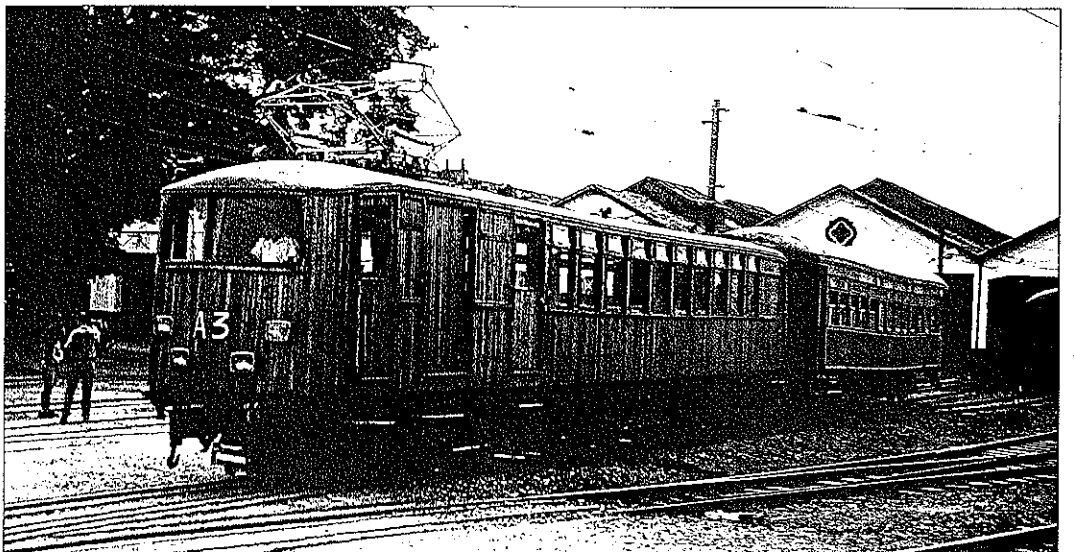
Left: One of the most remote tramways in the world is on the island of Itatinga, accessible by motor launch from the town of Bertioga only with government permission or on an officially sanctioned tour. The 7 km line runs from the boat landing to a hydro-electric power generation facility serving the needs of the nearby city of Santos. Two open motor cars and three open trailers comprise the fleet of the 800 mm gauge railway, which was converted to electric traction in 1958 and provides the only transportation on the island.



Three German trams from the 1920s continue to operate in local service between the resort city of Campos do Jordao and the suburb of Sao Cristovao, a distance of 8 km. MAN-built 5, 6 and 7 were acquired from Guarujá in 1956, when that tramway system was abandoned.



Modified extensively through the years, single-ended interurban car A1 is shown at Reino das Aguas Claras, 17 km outside the city of Pindamonhangaba, where its 47-km interurban journey to Campos do Jordao began.



Four railcars were built with English Electric equipment for the *Estrada de Ferro de Campos de Jordao* when the railway was electrified in 1924. A3 pushes its trailer back toward the carhouse after completing a local round trip from Pindamonhangaba to Piracuama, 20 km away. This motor is the least modified of the four interurban cars on the property.



One of the unmissable experiences of Melbourne is sampling the delights of the southern hemisphere's largest tramway system and a gourmet meal at the same time, made possible by a booking on one of the city's restaurant trams. Here converted W2 442 passes a 'restaurant' catering for a rather different market at Acland St, St Kilda. Colin Stannard

**LOUISVILLE, KY.** Preliminary engineering and an environmental impact study will get underway this summer on Louisville's proposed light rail line. The cost is estimated at USD 8.2 million, about USD 7 million to be paid to consultants Schimpeler/American and DeLeuw Cather to map the proposed route. The 20.8-km line, parallel to crowded Interstate 65, would start just south of the airport and serve the Kentucky Fair & Exposition Center, the University of Louisville, several major employers, a large medical center and the city centre. Also to be studied are potential conflicts with utilities and other public services. The consultants will determine if there will be adverse impacts on vegetation and animal life and will begin the system design. Most importantly, more accurate ridership and construction cost estimates - the latter currently USD 550 million - will be made. (J. Wolinsky)

**MINNEAPOLIS, MN.** Major barriers to construction of the Hiawatha light rail line were removed in mid-April when the Federal Transit Administration approved the state's management plan and cleared the project for final design. Two Federal Aviation Administration rulings will allow airport funds to be spent on two rail stations serving Lindbergh and Humphrey terminals at the Minneapolis-St. Paul International Airport and on the rail tunnel under its runways. The management arrangement was the most difficult and required four changes in the proposed chain of command before the FTA finally approved a scenario that places the local Metropolitan Council in charge of building the line. Originally Minnesota DOT, which will supervise the work, and state Transportation Commissioner Elwyn Tinklenberg were to have final authority. The next major step will occur June 30 when design-build contract bids are due. On 21 July, LRVs are scheduled to be ordered followed on 17 August by the award of the construction contract. The biggest milestone should occur in

October when the FTA makes a final decision on federal funding. (J. Wolinsky)

**NEW ORLEANS, LA.** The Regional Transit Authority is preparing a substitute plan for the outer terminal of the proposed USD 153 million Canal Street tramway because it has been unable so far to buy or lease 3.5 acres south of City Park Avenue between Canal Street and Interstate 10. An elaborate intermodal facility with eight bus bays had been planned for the site to permit seamless transfer. To reach the USD 5.5 million terminal, streetcars would have turned onto City Park Avenue for a short distance between Canal Street and the Interstate. But the Firemen's Charitable and Benevolent Association of New Orleans, which owns the land, and the RTA have not been able to reach agreement. The transit agency is now proposing to terminate the tramway in a new 7.3-m wide neutral ground in the center of Canal Street, and in early May held public hearings on the design change as required by federal law. Another change, designed to cut the project's cost, calls for storing, cleaning and maintaining the Canal cars in the RTA's existing A. Philip Randolph Operations Facility instead of at a new USD 20 million, 11-acre facility on St. Louis Street as originally proposed. That plan would have required a yard lead to be built along Galvez Street. Meanwhile, collection of a 1% sales tax on hotel and motel rooms that will pay the local share of the Canal project has been delayed two months until July. The hospitality industry last February had agreed not to contest the levy after it was decided that some of the proceeds would be used to promote tourism and expand the convention centre. However, 16 hotels and one industry organisation later raised questions about the legality of the deal brokered by New Orleans Mayor Marc Morial. On 2 May the opponents agreed to drop their resistance and the final consent decree is being drawn up. (J. Wolinsky)

**NEW YORK, NY.** The MTA approved a

revised version of its five-year capital budget that calls for building the complete Second Avenue subway in Manhattan instead of the so-called Stubway from 125th Street to 63rd Street. However, only USD 350 million is allocated to the project for design work. The USD 17 100 million program includes preliminary construction of a Long Island Rail Road connection to Grand Central Terminal, 472 new EMUs, design and engineering of a 25.7-km third track on the Long Island Rail Road's main line between Hicksville and Queens Village and a subway extension to La Guardia Airport in Queens. Another project approved by the MTA board is USD 4000 million replacement of the old and overloaded Tappan Zee Bridge over the Hudson River just north of New York City. In addition to more traffic lanes, the new span would incorporate a new commuter rail line that would extend from Stewart Airport in Orange County, New York, through Rockland and Westchester counties to Port Chester, near the Connecticut border. Financing for the five-year package would come, in part, from a USD 3800 million state transportation bond issue that must be approved by voters in November; the MTA would get USD 1600 million. About USD 5000 million is expected to come from federal grants and the city of New York will provide about USD 700 million. The agency would also borrow USD 22 000 million, some of which would retire USD 13 600 million in existing debt. This is the largest sale of new and refinanced municipal bonds ever, and the MTA can do it without voter approval. Critics have charged that the agency will be so over-burdened by debt it will ultimately have to raise the USD 1.50 fare.

The first of 32 MK II vehicles for the eight-mile automated light rail that will connect JFK International Airport with the subway and the Long Island Rail Road has rolled off Bombardier's production line. Testing began 19 April at the firm's test track at Kingston, Ontario, and it will soon be joined by

two more cars. Meanwhile, work on the operations and maintenance center is ahead of schedule. Construction of the guideway around the airport, connecting the terminal buildings with each other and with the Howard Beach subway station, is well underway, and pilings are being driven along the segment between JFK and the LIRR station in Jamaica. Officials of the AirRail Transit Consortium, which holds the design-build-operate-maintain contract, say the overall project is on schedule. By the end of September, six cars should be on the property and testing in the yard is set to begin in October. Linear induction motors, the same system utilised by Vancouver's SkyTrain, provide traction power. In March 2001, the first two sections of the system should be ready for testing, the other two being activated the following September. Simulated service is planned for mid-June 2002 and the first passengers are scheduled to board the trains in September. (J. Wolinsky)

**PHILADELPHIA, PA.** SEPTA marked the arrival of the final 10 diesel-hauled commuter rail cars out of 45 ordered from Bombardier with a ribbon cutting ceremony on 24 April at the Market-East Station. These were the system's first new coaches in 13 years and will be used on the R3 West Trenton and R7 Trenton lines.

(J. Wolinsky)

**PORTLAND, OR.** March MAX patronage was up 11.5% over March 1999, reaching an average of 66 800/day. Total daily light rail and bus patronage increased by 5.1% to 274 100/day.

(C. Lietwiler)

**SACRAMENTO, CA.** A Record of Decision for Sacramento Regional Transit's 17.4-km light rail extension to suburban Folsom was signed on 4 May by FTA Regional Administrator Leslie Rogers. RT General Manager Pilka Robinson said this clears the way for construction to start this fall on the USD 168 million project, which includes five new stations and additional double tracking on the existing line between 19th and 23rd Streets and from Power Inn Road to Watt Avenue. Other elements include 14 LRVs, part of an order for 40 placed last year with the Spanish firm CAF, and a storage yard. The first 4.5-km from Mather Field Road to Sunrise Boulevard is set to open by the summer of 2002, followed in December by the remainder of the route into central Folsom. The final 1.1-km segment, from central Sacramento to the Amtrak station, should be completed by September 2003. Heavy construction is scheduled to begin this summer on RT's other major LRT expansion, the 10-km South Line. (J. Wolinsky)

**SAN ANTONIO, TX.** Plans for an ambitious USD 1500 million light rail system were defeated by voters in the San Antonio area on May 6 by a margin of more than two-to-one, but with a turnout of less than 10%. 70% of those casting ballots rejected VIA Metropolitan Transit's proposal for a 1/4-cent sales tax to help build a three-line, 85.6-km system that would have served the city centre and other major traffic generators including the airport. LRT had the support of the business community and political leaders but was bitterly opposed by





The Strasbourg 'Eurotram' design of ADtranz found its second customer in Milano, where ATM 7001 was captured on a test run in March 2000 at Lorenteggio. Pete Ehrlich

anti-tax groups and many suburban communities. The Pearl Brewery is closing down on 30 June, which will mean the end of electric freight operation by the Texas Transportation Co. However employees are trying to stage a buy-out. (J. Wolinsky, R. King)

**SAN DIEGO, CA.** The House Appropriations Sub-Committee has approved USD 45 million in federal funding for the Mission Valley East light rail extension (planned to open in 2004). (C. Flescher)

**SAN FRANCISCO, CA (BART).** BART tickets can now be bought on-line, with delivery to home or office in a designated 30-minute time slot. Delivery is free for ticket orders of USD 50 or more; there is a USD 4.95 charge for smaller orders. A bill has been introduced into the state legislature that will require Santa Clara County to buy into BART before an extension can be built to San Jose, and also for BART to commit itself to extensions to Antioch and Livermore. (T. C. Swinney)

**SAN FRANCISCO, CA (MUNI).** Muni's web site with real-time information on the operation of (some) bus and all Muni Metro services came on line on 12 April and the latter can be accessed at [www.nextbus.com/munimetro](http://www.nextbus.com/munimetro). The same system feeds information displays at all subway stations and certain surface stops on route N. The new baseball stadium for the San Francisco Giants on King St at 3rd St has brought heavy traffic for Muni, with special service between West Portal and the CalTrain station in addition to regular service on route N. The wiring of the new section of track on the Embarcadero between Mission St and Folsom St also permits direct service to be provided between surface tracks in Market St/Fishermans Wharf and the CalTrain station. A new City Pass for visitors to San Francisco has been introduced, valid for seven days unlimited travel on all Muni services plus discounts at various museums and sightseeing attractions. It costs USD 33.25 (USD 26.25 for seniors, USD 24.25 for children). Due to emergency construction work from 17 May, route was replaced by buses each day

after 15.00 for an indefinite period. The Proof of Payment system was extended to all five Muni Metro services from 10 June. New Powell St cable car 9 entered service at the end of April painted in the white front and green livery of the Market Street Railway, and replacing the old car carrying that number. Two more Powell St cars are under construction, while a new California St car has been built, but not put into service. Plans to improve Muni service south of Market St from January 2001 include extension of route N service from midnight to 01.00. (T. C. Swinney)

**SAN JOSE, CA.** The Santa Clara Valley Transportation board of directors at its 4 May 4 meeting endorsed the Environmental Impact Report on one new light rail extension and awarded two other construction contracts. After certifying the final EIR for the Vasona Corridor line, the board adopted a resolution approving the project. It also authorised the General Manager to execute a USD 2.95 million contract for construction of stations and a park-and-ride lot on the Zanker Road-Interstate 880 segment of the Tasman East extension and approved a USD 456 338 contract for special trackwork to be used in the expansion of the existing LRV storage yard. Opening of the Tasman West line has resulted in Mountain View replacing San Jose as CalTrain's third most popular station. Historic Trolley service resumed in early April with one car operating a 45-minute service between Civic Center and Convention Center from 10.45 to 17.30 daily until early October. (J. Wolinsky, T. C. Swinney)

**SCOTTSDALE, AZ.** Scottsdale and Tempe are to spend USD 700 000 on a 12-month feasibility study for a rapid transit link to Phoenix. Consultants will consider light rail, express bus service and a monorail. (C. Lietwiler)

**SEATTLE, WA.** Sound Transit and Burlington Northern Santa Fe have signed a tentative contract that, if ratified as expected, would eventually permit up to 18 daily Sounder commuter rail runs between Seattle and Tacoma. The USD 310 million draft agreement required two years of tough

negotiations and requires ST to pay USD 285 million for a major track capacity increase and signal upgrade to allow reverse running on the BNSF-owned line. The remainder would come from the railroad, federal funds and private sources. A 40-year operating agreement calls for BNSF to be paid an additional USD 4 million annual usage fee. ST now hopes to begin a limited service in September - cars and locomotives have already been delivered - and the full 18-train schedule by the end of 2002. Trains were supposed to start running last December but delays in reaching a deal forced ST to postpone Sounder's start-up indefinitely.

King County and the city of Seattle have agreed to give the 2-km central trolleybus tunnel to Sound Transit, which intends to convert it for light rail use. Construction is tentatively scheduled to begin in 2004 and be completed in 2006, when the USD 1900 million Link LRT system is set to open. The buses would return to already congested surface streets, annulling the tunnel's original purpose, although Third Street may be restricted primarily to transit vehicles during rush hours. Reaction from the downtown business community has not been kind to ST because so many buses would be put back on the street. The transfer agreement shifts the tunnel's remaining USD 130 million debt to ST and gives the high-value site of the Convention Place station, which will be abandoned, to King County for sale to developers. All three entities involved, the King County Council, the Seattle City Council and the Sound Transit board, must approve before the pact becomes final. (J. Wolinsky)

**TACOMA, WA.** Construction of the 1.6-mile Tacoma Link light rail line will begin this autumn on Pacific Avenue. Work will progress one segment at a time, ending just beyond South Ninth and Commerce streets in the spring of 2002 followed in the autumn by full passenger service. The trains will be fare-free. Three Astra trams built by Skoda in the Czech Republic will connect Pierce Transit's Tacoma

Dome intermodal station with the central area and four intermediate stations. (J. Wolinsky)

## VENEZUELA

**VALENCIA.** The first four articulated metro cars and 110 containers of electrical equipment arrived at Puerto Cballo on 12 May. Another four cars were due in June and the entire fleet of 12 Siemens-built cars should be ready for testing by the end of the year. Commercial operation of the 6-km underground line is planned for 2002. (A. Morrison)

## 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](mailto: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 *Lokaltrafik*, MfSS *Meddelanden från Svenska Spårvägsällskapet*, 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*.

## MUSEUMS

**GRAZ (AT).** The tram museum at Maria Trost will be open from 2 June to 17 September on Fridays and Saturdays 15.00-19.00 and on Sundays 15.00-18.00. Each Friday a museum tram set will run a tour from the museum at 17.00; 234+401 will be used mostly with 343 as a possible second trailer. On Saturdays from 1 July to 9 September a guided sightseeing tour will depart Hbf at 15.00, including a return trip to Maria Trost. (EB)

**THUIN (BE).** The tramway museum at Thuin-Ouest is open at weekends, 13.00-18.00 from 1 June to 1 October. Trams run on Sundays only (14.00-18.00). The substation has now been installed and overhead is being installed to permit electric trams to operate this summer. (R. Dussart-Desart)

**LILLE (FR).** The *Amitram* group has completed restoration of ELRT bogie tram 420 to 1910 condition. (T-2000)

**PHOENIX, AZ (USA).** A short museum tramway has opened at the Arizona Railway Museum using Birney car 116. (J. W. Vigrass)