

# HEADLIGHTS



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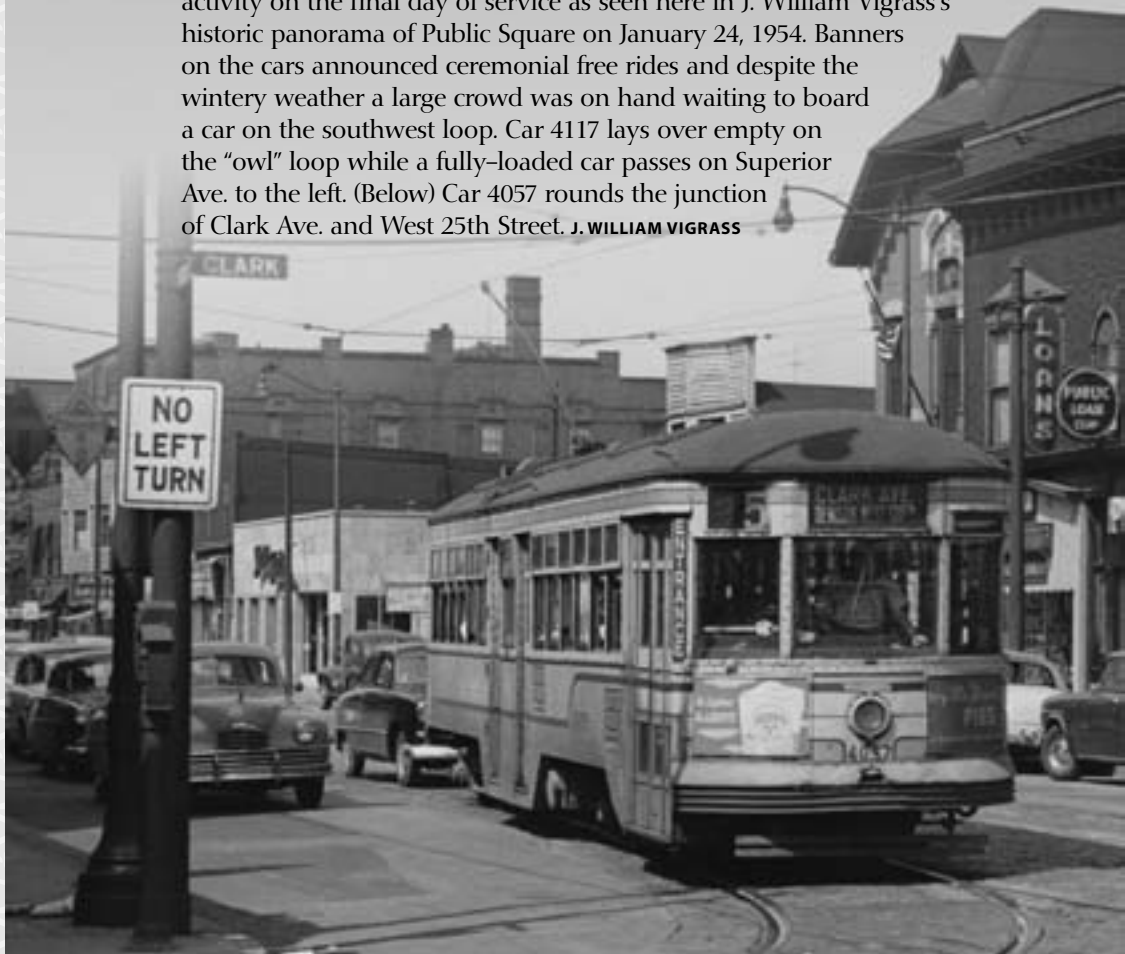
Trams return to Sydney. A stunning photo report by Howard R. Clark.

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Peter Witt left much to the transit industry besides the car that still bears  
his name. Text and photos by J. William Vigras.

## On the Cover

Madison Ave. in downtown Cleveland was a hotbed of Peter Witt streetcar  
activity on the final day of service as seen here in J. William Vigras's  
historic panorama of Public Square on January 24, 1954. Banners  
on the cars announced ceremonial free rides and despite the  
wintery weather a large crowd was on hand waiting to board  
a car on the southwest loop. Car 4117 lays over empty on  
the "owl" loop while a fully-loaded car passes on Superior  
Ave. to the left. (Below) Car 4057 rounds the junction  
of Clark Ave. and West 25th Street. **J. WILLIAM VIGRAS**



# RAIL TRANSIT News



## BALTIMORE

SEPTEMBER 9, 1997 – For the 30,000 people who work in Cockeysville, home to 16,000 people and the Hunt Valley Mall, catching the Baltimore Central Light Rail Line used to require a drive to the Timonium Park-and-Ride terminus 4½-miles away. With the opening

today of the five-station Hunt Valley extension they can now leave a few minutes later.

Revenue service to the new terminal began with Maryland's Governor Parris Glendening on board the first train. At 27 miles from the south end of the line at Cromwell in Glen Burnie, this is the longest light rail line in North America except for Northern Indiana's South Shore Line, and is five miles longer than the Los Angeles to Long Beach Blue Line. The Maryland line averages 21.6 mph, for a running time of 75 minutes, which compares favorably to the Los Angeles Blue Line average speed of 24.4 mph (especially considering that LA has a downtown subway).

Eighteen new cars have begun arriving from ABB Traction (Adtranz), which will bring the total fleet to 53. Baseball games generate the peak car demand, requiring 36 on the busiest days. Baltimore's weekday ridership of 22,000 on the Timonium line is expected to grow to 24,000 with the Hunt Valley extension. Further growth to 25,000 is projected by 2005. Double track has been built between Nursery Road and Patapsco Avenue to permit more frequent service, but single track remains across the Middle Patapsco River south of

Camden Yards, where a mammoth new football stadium is under construction. Two additional rail extensions, one to Baltimore-Washington International Airport and a second to Amtrak's Penn Station, are scheduled to open on December 6th of this year. The *Baltimore Sun* has reported favorably on the new service.

The Maryland Mass Transit Administration is also studying a new interurban light rail line which would run 30 miles from Frederick to the end of the Washington Metro Red Line in Shady Grove, 18 miles northwest of Washington, D.C., to relieve projected gridlock on Interstate Highway 270. Montgomery County has reserved the right-of-way for this proposal but has not acquired any of it. A busway is also being studied, but this does not appear to be a viable alternative.

MARC has placed an order with Bombardier for six additional 7,000 horsepower electric locomotives (similar to AEM-7s) for use on the 76-mile Penn Line between Washington, Baltimore and Perryville. The diesels they are to replace would be transferred to the new Frederick Line now under construction.

## SACRAMENTO

AUGUST, 1997 – U.S. Secretary of Transportation Rodney E. Slater signed the Full Funding Agreement for \$111

million in federal funds to help build the new South Light Rail Line 6.3 miles to Meadowview Road along the Western Pacific (now Union Pacific) right-of-way. There will be six new stations, including three with a total of 3,361 parking spaces for commuters. State and local aid will provide another \$111 million to complete the funding.

Service will begin in 2005. 24 additional cars will use the present line to circulate around the state capitol downtown and terminate at the Amtrak Capitol Corridor station. Bus routes 63, 64 and 67 now serve this corridor with a combined daily headway of 15 minutes. Bus routes 5, 61 and 62 provide crosstown service to the stations at Meadowview, Florin and Fruit Ridge. The 37-minute bus travel time will be reduced to 24 minutes by light rail.

Since light rail first opened in Sacramento a decade ago, system transit ridership has doubled, with light rail now carrying 28,000 per weekday on 32 scheduled cars. Four cars are reserved for spares and a shop margin. Each scheduled car averages 875 passengers per weekday, 29 more than a busy New York subway car – not bad for this small, car-centric city. Light rail composes only 15% of Sacramento's transit fleet but carries 33% of its passengers. ☺

REPORTED BY E. L. TENNYSON

# TRACTION Down Under



## SYDNEY LIGHT RAIL: AUSTRALIAN FOR SLEEK

PHOTO REPORT BY HOWARD R. CLARK

**T**RAMS RETURNED TO THE STREETS of Sydney, Australia, on August 8, 1997. The new line operates between the Central Railway Station and the developing Pyrmont district. It uses a fleet of 100% low floor cars based on the Variotram design. Until the late 1940s Sydney boasted a huge tramway system, but a program of conversion to buses led to the elimination of all trams. The last route was abandoned on February 25, 1951. 🌐

**Spic and Span.** (above) Sydney Tramway Museum's "scrubber" car 134s, built in 1898, was borrowed to clean the new rails prior to the start of service on the light rail line. New light rail car 2101 occupies the adjacent track while the monorail looms in the background.

**Opening Day.** (below) Car 2015 breaks through a barricade during opening



HOWARD R. CLARK



day ceremonies for Sydney's new light rail line. Overlooking the scene is a monorail train emerging from one of that system's circular stations.

**Generation Gap.** (right) Sydney Light Rail cars 2103 and 2107 are shown on opening day in the Central Railway Station



HOWARD R. CLARK

Colonnade where an earlier generation of trams once operated. On display in the

background is "C" class car 29, built in 1898. This car was used when the original line was opened in 1906.



HOWARD R. CLARK

**HOWARD R. CLARK**  
**Trial Run.** (left) Sydney Light Rail car 2103 pauses at a station during trial runs prior to opening day. In the background is the old power house which was built in 1899 to supply the Sydney tramways with electricity. It is now known as the Power House Museum and is one of the city's major attractions.

# RAIL BOOK **Reviews**



## **PACIFIC ELECTRIC, IN COLOR, VOLUME 1**

by P. Allen Copeland, 1997

Morning Sun Books

9 Pheasant Lane

Scotch Pines, N.J. 07076

8½" x 11" hard cover, 128 pp., \$50

▲ **Ex-Pacific Electric (PE) no. 1529 in Long Beach, August 14, 1959.**

▶ **Ex-PE combine no. 1546 at the Santa Fe freight station in Perris, August 16, 1959.**

**M**ORE BOOKS HAVE PROBABLY BEEN WRITTEN about the Pacific Electric Railway (PE) of Los Angeles – which at one time styled itself the “world’s greatest interurban” – than any electric railway. Whether accurate or not, PE exerted a powerful fascination on all who came in contact with it. A perusal of *Pacific Electric* helps to explain the appeal of this now defunct carrier.

P. Allen Copeland has assembled an impressive array of photographs, made by many skilled lensmen, of scenes along the PE, generally in the period from the late '40s to the end of electric service in the '60s. Grouped here by car type, they include the small, attractive 100-series city cars, the numerous 600-series center door suburbans, the unusual double-ended PCCs, the wood 950s

ARTHUR J. LONTO



ARTHUR J. LONTO

► PE freight depot, Union Station, Los Angeles, looking north from Aliso St., August 20, 1951.



ARTHUR J. LONTO

► (far right) No. 740 on Air Line looking southeast past Amoco station at Nevin Ave., Los Angeles, August 8, 1951.



ARTHUR J. LONTO

and 1000s, the heavy steel 1100s and 1200s, the combos, the box motors, the locomotives and sundry work equipment. A few shots of the narrow gauge Los Angeles Transit Lines cars conclude the book.

Captions are informative and include dates. A short introduction and a list of the rail lines, as well as a two-page map, place the photographs in context. Reproduction is very good. The format is the usual one followed by this publisher.

If you appreciate views of a variety of big electric cars, in striking red paint and orange trim, rolling through the streets and countryside, under mostly sunny skies, then buy *Pacific Electric*. You'll enjoy it.



JACK MAY

▲ Platte Valley, Denver, August 1995.

► Fort Collins, August 1995.



JACK MAY

## CENTENNIAL STATE TROLLEYS

by Ken Fletcher, 1995

Colorado Railroad Museum

P. O. Box 10

Golden, Colo. 80402

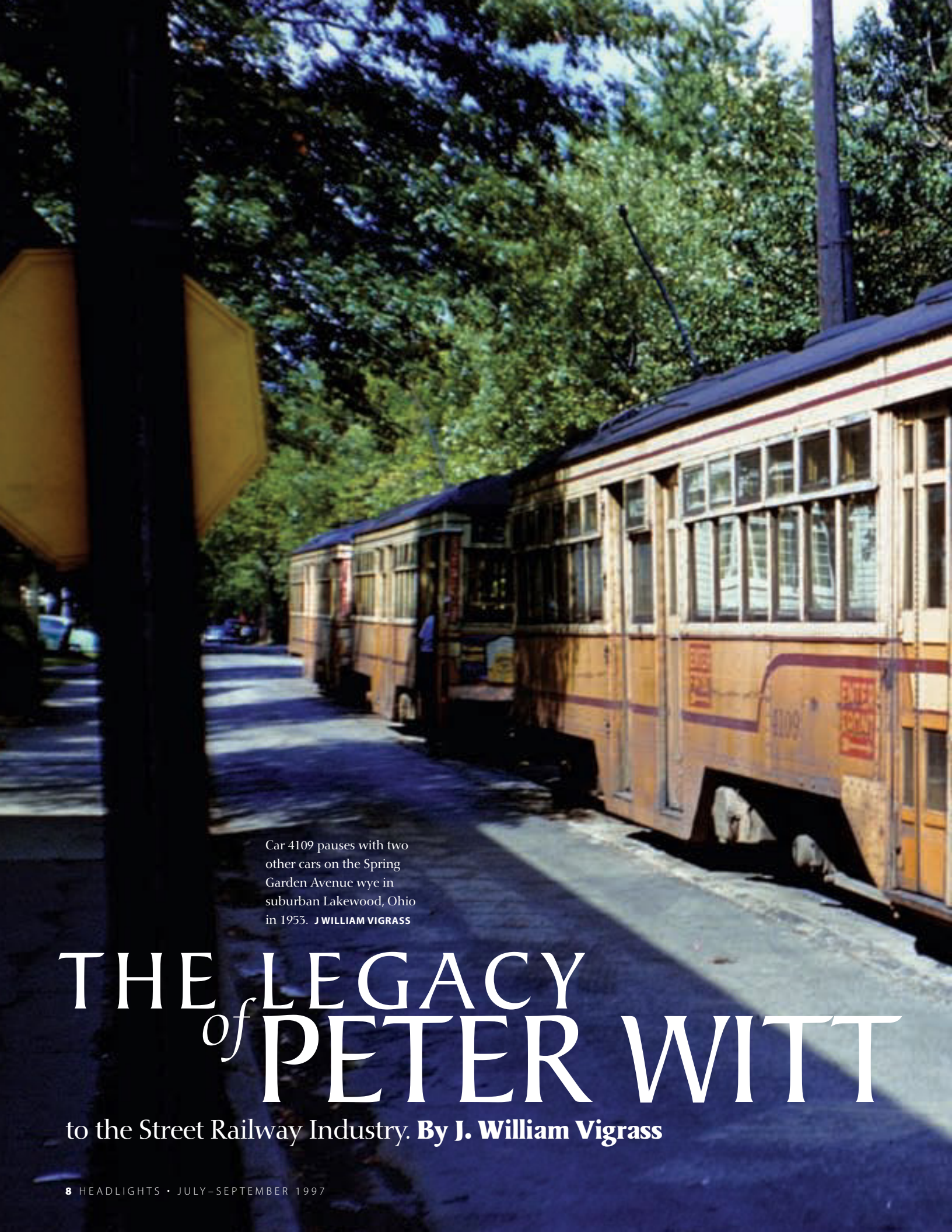
11" x 8½" soft cover, 160 pp., \$25

WHAT DID ASPEN, DURANGO, LEADVILLE AND Pueblo have in common? Aside from their Colorado location and railroad connections, they all supported streetcar operations at one time. From Englewood and Leadville – which managed to build only short horsecar lines that never justified electrification – to the large systems of Denver and Pueblo, *Centennial State Trolleys* ranges across the Centennial state to illustrate all the trolley systems that ever turned a wheel there.

Organized alphabetically by town name, each section contains a short descriptive text, a map, and at least one photograph of the company under review. Reproduction of the 200 or so illustrations is excellent, and captions provide additional information. All are black and white, except for the cover pages, and a number are ½ page or larger in size. The book concludes with a bibliography and one striking shot of the state's new trolley line in downtown Denver.

Reasonably priced, Ken Fletcher's *Centennial State Trolleys* stands as a visual record of Colorado's once extensive electric traction network. ☺

BOOKS REVIEWED BY JAMES N. J. HENWOOD



Car 4109 pauses with two other cars on the Spring Garden Avenue wye in suburban Lakewood, Ohio in 1955. J WILLIAM VIGRASS

# THE LEGACY *of* PETER WITT

to the Street Railway Industry. By J. William Vigrass





18

MADISON  
PUBLIC SQ.

FRONT ENTRANCE

No Lighter  
No *LAGER'S*  
PILSENER BEER

WINE

4109



The name of Peter Witt has been associated with a particular streetcar design that has endured for decades. As late as 1995, Peter Witt cars operated in Milan, Italy. Although transit professionals and enthusiasts may know what a Peter Witt car is – it is even fairly common knowledge that the car originated in Cleveland, Ohio – few know why it was developed, much less when. Even less well known is the fact that Peter Witt initiated several innovations that helped make the Cleveland Railway Company the fastest large street railway system and one of the most efficient in the United States during the period of 1912–1930, the hey-day of the street railway industry.

So who was Peter Witt? What did he do? The following feature appeared in *Brill Magazine*, February 15, 1912:

“Peter Witt, Street Railway Commissioner of Cleveland, Ohio, was born in Cleveland, 1869. He was City Clerk during four successive administrations of Mayor Tom L. Johnson, from 1903 to 1910. His comprehensive knowledge of taxation and kindred subjects lead Mayor Johnson to appoint him head of a tax investigation. He was made Street



**Peter Witt.** The Street Railway Commissioner of Cleveland, Ohio, as he appeared in *Brill Magazine* in 1910.

Railway Commissioner by Mayor Newton T. Baker, January 1, 1912, and is still serving in this capacity. The scope of the duties of Street Railway Commissioner of Cleveland is very broad, and includes the planning and supervision of extensions, routing, schedules, rates of fare, ordinances controlling tracked streets and car operation in general. Mr. Witt was the originator of the alternate-stop plan, which has increased the railway schedule from 10 to 12 mph, and has revolutionized the handling of peak loads. He was the originator of the Cleveland Center-Entrance Trail Car, which has had much to do with

**J. William Vigrass** is a project manager for Hill International, Inc. in Willingboro, N.J. He is currently Project Coordinator – Systems for the Tren Urbano Project of San Juan, Puerto Rico. Mr. Vigrass has been an ERA member since 1949.

bringing trail car operation into prominence during the last few years. He is responsible for the scheme of “pay-leave” which has been in general service in Cleveland for a number of years, and has resulted in overcoming the severe congestion at the Public Square, in the center of Cleveland from which all lines radiate, and also at all terminals. In actual service the “pay-leave” method of loading and unloading cars has been demonstrated to be equivalent to the doubling of the capacity of the lines at terminals. Mr. Witt is well known as a speaker on city railway transportation, public relations and economics.”

[The excerpt then goes on to quote Mr. Witt...] “Between the car riders who own the streets, and private companies having tracks therein, a constant, and at times a bitter, struggle takes place. The spring from which flows this stream of trouble is the failure of both to understand each other. The former demands a maximum service for a minimum fare, while the latter give a minimum service for a maximum fare. Both are wrong! The principle that all must accept is, that the service shall be rendered at cost. Cost in this instance must be limited, for the car riders contribute the biggest part of the joint undertaking, that is, a monopoly use of the street for transportation purposes.

**Creature Comforts.** (right) The center door 1100–1300 series cars were noted for their passenger comforts. Then-new 1263 with trailer 2205 is shown loading passengers at Public Square on the Euclid Avenue line around 1915–1916. This clearly shows the congestion at the doorways of the center-entrance and exit car that Peter Witt sought to overcome.

**Safety Zone.** (below) Car 5027 at the safety zone stop in front of Windermere car house on March 31, 1946 enroute to Public Square. This was the highest numbered articulated unit. Note how the safety zone just includes the doorways of the second unit. Dented anticlimbers were common on Euclid.





COLLECTION OF J. WILLIAM VIGRASS

“Private enterprise depending upon public rights must not expect the public to furnish the means of its own undoing. The public must not expect private enterprise, though enjoying special privileges, to give something for nothing” – Peter Witt. [Witt remained active in Cleveland politics until he died October 20, 1948.]

The office of Street Railway Commissioner was created by the Taylor Grant, a

franchise effective March 1, 1910, from the City of Cleveland to the newly formed Cleveland Railway Company. The latter was the result of a merger of the Cleveland City Railway and the Cleveland Electric Railway. The franchise was a service-at-cost agreement, one cost being a fair return of 6% on a fair investment carefully monitored by the Street Railway Commissioner. He had a lot of influence and used it creatively for the long-term benefit of the City, the Railway and the citizens, and car riders of Cleveland and its environs.

Witt’s first contribution was a recom-

mendation to obtain 100 very lightweight trailer cars (2000-2099) to increase capacity of the system quickly and at low cost. Use of two-car trains would also increase capacity of Public Square’s several loop terminals by doubling the capacity of each traffic unit – the train rather than the car. The November 1912 *Brill Magazine* described the event as follows:

ONE HUNDRED TRAILER CARS FOR CLEVELAND; STEEL UNDERFRAME  
 “The G.C. Kuhlman Car Company is delivering 100 trailer cars, for single-end operation, to the Cleveland Railway Company that are the result of an unusually careful analysis of the





Peter Witt's alternate stop plan cost nothing, was implemented quickly and increased average system scheduled speed 20%

local street railway situation. It was long a question as to whether additional motor cars, or the introduction of trailers would best fulfill the requirements of the Cleveland traffic situation. After many conferences, in which the questions were debated by both the railway management and the City Council, the decision finally favored the trailer car installation. The cars are arranged for a large seating capacity and are built as light as prudence permits. A signal system, between the conductor of the trailer and the crew of the motor car, was devised which insures safety to passengers and despatch in operation, for it is apparent that trailer operation, if not carefully planned, may result in embarrassing delays and operating errors. Operation in Cleveland is complex, for the reason that all main line cars have to run either through or to the central loop system in Monument Square, at the

center of the city. The consequent congestion at that point during the hours of peak load has grown to an extent that some system must be developed affording both immediate relief and greater capacity for future demands, and it remains to be seen if trailers can be successfully added and operated through the loops. A combined system of pay-as-you-enter and pay-as-you-leave is used in the trailer, in conjunction with a single center door, one-half of the car being operated on the former and the other on the latter basis, the fare-box being the division between the two. The half-door marked "entrance" in the accompanying illustration, is used by all passengers, those remaining on that end paying when they leave, and those going into the other end having to pay when they pass the conductor. At times of greatest congestion this system apparently facilitates loading, as observations have

**Mayor Johnson.** (top, at left) Statue of Tom L. Johnson in Public Square. He was Cleveland's mayor during the time of Witt's activities.

**Passing Gas.** (below) Car 4109 passes a repair crew at West 117th Street and Madison Avenue, the border of Cleveland and Lakewood, where a sewer gas explosion in late 1953 caused heavy damage to the track structure and roadway. This led quickly to the conversion to motor bus operation of the last streetcar line in Cleveland. Car 4109 is operating eastbound on the westbound track approaching a temporary crossover that lies on top of the paved track.

**Lakewood.** (right, at top) Car 4104 operates on Madison Avenue near the end of the line in Lakewood.

**State Road.** (right) Car 4078 rounds the curve on State Road at Brookpark Road near the outer end of the State Road Line. Its destination sign has already been changed for its return trip to Public Square.





J. WILLIAM VIGRASS PHOTOS

shown that during the evening rush hour period the approximate ingress is 94%, while egress approximates 6%. This shows the influx to be such as to make it almost impossible for the conductor to collect fares from all entering passengers at heavy traffic stops.

"The door mechanism on the right side is pneumatically operated by the conductor by means of push-buttons, which allow the operation of a single door, or the opening or closing of both doors in unison, together with interdependent starting and stopping signal system. An emergency hand brake is placed at the conductor's position.

"The cars are mounted on trailer trucks of the Brill No. 67-F type, specially designed for this service. Each side frame is cast in a single piece, including pedestal tie-bar and bolster columns. No end frames are used, and the truck with its 22" wheels and 4' 4" wheel base is unusually compact"

The 49' trailer with an empty weight of 26,340 lbs. weighed but 538 lbs. per foot. Every element of the car was subject to weight analysis, one result being the use of 22" diameter wheels.

The 2000s were followed by 2100-2199 and 2200-2299 in 1913. As noted in the Brill article, another objective of train operation was the increased throughput of downtown terminal loops and intersections. A train, needing to stop and start at each intersection or car stop, took slightly longer than a single car to pass through an intersection. Throughput was increased substantially.

Motorcars at the time had 4 x 40 hp traction motors, so the average hp per axle fell to 20 hp for a train. Scheduled speed was slower but was an acceptable trade-off, particularly following introduction of Peter Witt's alternate stop plan. Later cars had 50 hp motors.

Peter Witt's alternate stop plan cost nothing, was implemented quickly and increased average system scheduled speed 20% from 10 mph to 12 mph, which reduced the number of cars or trains with crews needed to handle a given amount of traffic. The plan was simplicity itself. Instead of stopping at every cross street, Cleveland streetcars stopped at alternate streets. For example, cars would stop at even numbered streets one way and odd numbered the

other way. Some passengers would have to walk an extra block to their stops on the way to work, others on the way home. Implementing alternate stops one block at a time would have been a political nightmare, but the City Council approved it for the entire city because of its clear, overall benefits. For many years Cleveland Railway Company's annual report proudly proclaimed it was the fastest system in the U.S. It is ironic that today several large systems in the U.S. still have transit stops at every street.

Soon after the arrival of 300 center door trailers, the Railway Company acquired 201 center door motor cars in several orders during 1913-1915. Cars 1100-1149 were delivered by the G. C. Kuhlman Car Company, Collinwood, Ohio (J. G. Brill of Ohio), in 1914. These cars had a longitudinal bench on the left side ("devil strip side") and transverse rattan seats on the right. Cars 1150-1199 followed with longitudinal seats throughout, the same as in trailers. They were unpopular with riders and, in later years, were used almost always as rush hour trippers.

Soon thereafter, 1200-1300 were delivered with the same seating plan as 1100-1149. They proved to be popular cars. Cars 1200-1255 were converted for rapid transit service, with almost all transverse seats and ran in revenue service until the 1960s. Several remain as work cars and one as an historic car on the Shaker Heights Rapid Transit, now the Green and Blue Line of the Greater Cleveland Regional Transit Authority. Six others have been preserved in museums.

Cleveland Railway was a major hauler of people. The 1100-1200 motors and 2000-2299 trailers made a large traffic unit, 100' long. Fully loaded, they seated 130 passengers. Older wooden pay-as-you-enter (PAYE) cars also hauled trailers.

Concurrently, PAYE cars operated most of Cleveland Railway Company's service. Some older PAYE motor cars were converted to "boxcar" trailers by reversing them and cutting doors in the