



Heavily rebuilt from its original 1909 appearance, Milwaukee Electric car 1124 awaits departure from the Public Service Building in downtown Milwaukee in November 1949.

George Krambles

10

ESSENTIAL INTERURBAN CAR DESIGNS

From early wood-bodied cars to heavy steel giants to lightweight speedsters, the interurban car came in many forms

By Art Peterson

Photos from the Krambles-Peterson Archive

During its brief golden age (roughly 1900 to 1920) and longer decline, the interurban industry produced some remarkable car designs. If you had to pick 10 landmarks, cars essential to any review of the industry, what would they be?

The handsome Niles “Electric Pullmans” would certainly make the list, perhaps with another example from the heyday of wood-car construction. A representative of the smaller, streetcar-like designs from the formative years of the industry should be included. The heavy steel cars of the mid-1920s, which many consider to be the apex of interurban design, deserve a place or two. Then there was the lightweight trend, exemplified by the Cincinnati & Lake Erie and Indiana Railroad “high-speeds” and other innovative designs. Although

most interurbans were passenger-oriented, trolley freight equipment should not be ignored.

What’s striking in looking at this handful of cars and trends is that, despite the combined resourcefulness of car shops, management teams, and carbuilders, most of the lines were barely able to stay afloat. Economic adversity, regulatory action, or public policies that increased miles of paved highways sank countless companies. Most interurbans were chronically undercapitalized, so even carriers that were committed to electric rail service found themselves done in by fires or other disasters because they did not have the resources to respond.

Despite the industry’s eventual failure in business terms, its rolling stock has a special place in rail history, as exemplified by the 10 cars (plus a few others) on the following pages.

1. IN THE BEGINNING



Early interurbans like Monongahela Valley Traction 242, seen on the line to Ida May, W.Va., in the late 1910s, followed streetcar practice.

The interurban era began with the construction of Ohio's Newark & Granville Street Railway in 1889, the year after the first truly successful street railway electrification, although the 7-mile N&GS attracted little notice. The term "interurban" would take a few more years to emerge.

Activity picked up in 1893 with the openings of the East Side Railway in Oregon and the Sandusky, Milan & Norwalk in Ohio. The Oregon line was in receivership within its first year, though it would end up being comparatively long-lived, carrying passengers into the late 1950s. For the SM&N, the burden of construction led to bankruptcy.

The cars used on these early lines frequently drew on street railway practices, especially in the Northeast. Records of one leading carbuilder, the American Car Co. of St. Louis, show that 99 percent of the city and interurban cars the firm built in 1899 were deck-roof cars. This type of roof, which featured a raised center portion extending nearly the length of the car, with clerestory windows on the front, rear, and sides, was

standard on streetcars. Railroad-roofed cars for interurban services, in which the raised roof portion curved down at the front and rear to meet the car's ends, followed in short order, and as early as 1901 the company was building its first arch-roof cars (which had a continuous curve from side wall to side wall and no separate raised portion) for interurban freight service.

Car lengths began to increase as construction methods and materials improved. American delivered its first 40-foot city cars in 1902, while the first semi-convertible cars were built that same year. (Semi-convertibles were cars with large window sashes that could be stowed in wall or ceiling pockets for summer operation.) The next year American delivered 50-foot cars to Northern Texas Traction, but these were just a stepping stone to the big cars of the next decade, with 56-foot, arch-roof cars built in 1911 for Texas Electric and 61-footers for Ogden, Logan & Idaho in 1915. The need to operate on tight streetcar curves generally limited interurban car length and necessitated the curved

ends (for clearance on corners) that added a touch of flair to the designs.

Early interurban rosters frequently reflected a wide mix of carbuilders and car configurations. No less than six builders delivered cars to the predecessor companies of southwestern Pennsylvania's West Penn Railways.

A road that would become affiliated with the West Penn was West Virginia's Fairmount & Clarksburg. Established in 1901, F&C was merged into the Monongahela Valley Traction Co. in 1912, which became Monongahela West Penn Public Service Co. in 1923.

Monongahela Valley Traction 242 (above) is typical of the early 1900s interurban cars, having improved the basic design to include a railroad roof and steam-road-style enclosed vestibules with folding doors. (Open end platforms, a legacy of the horsecar era, persisted after street railways were electrified.) The nine-window passenger compartment is of the semi-convertible design, popular between 1900 and 1914. The car rides on trucks designed for 40 mph service. MVT 242's total weight was about 17 tons.

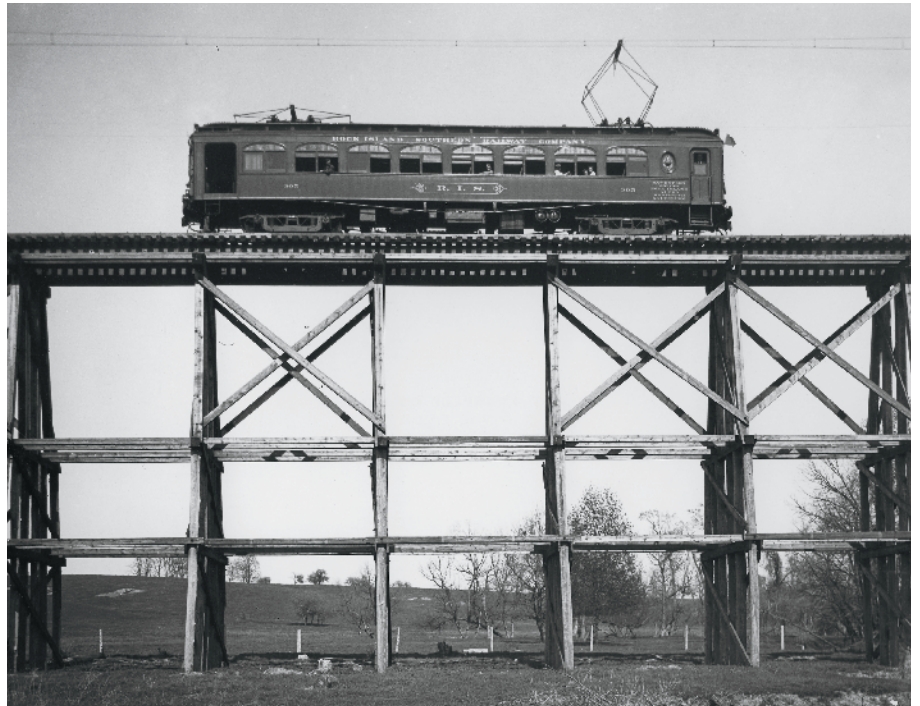
2. 'ELECTRIC PULLMANS' AND KIN

Niles was in the interurban carbuilding business for just 17 years starting from 1901, yet the company's products are considered to be some of the most graceful-looking cars built. Graceful, yet massive, that is. Niles' 1907 order for the Washington, Baltimore & Annapolis was for 19 62-foot coaches, each weighing 54½ tons. These figures approached those of steam-railroad equipment, and indeed Niles called the cars "Electric Pullmans."

In an era before microchips or any sort of miniaturization of electrical equipment, these cars were amazingly complicated, having to deal with the 6,600-volt A.C. electrification on the WB&A line, as well as the 600-volt D.C. operation required to enter the District of Columbia. Furthermore, the cars had to operate off poles at both voltages, as well as the underground conduit power system that was mandated in order to keep the nation's capital free from overhead wires.

The complications in design made the cars difficult to keep in service, while their massive transformers made them excessively heavy, resulting in high power consumption and damage to the Washington street trackage. The cars darn near ruined the WB&A, which converted to 1,200-volt D.C. in 1909. After just a couple of years on the WB&A, the Electric Pullmans were scattered to other properties.

Six went to the Rock Island Southern, which had a 6,600-volt A.C. line between Monmouth and Rock Island, Ill. RIS also had a slightly older D.C. division between Monmouth and Galesburg. The A.C. line was famous for its wood trestles, but it also suffered from a dearth of traffic, and



Around 1911, Rock Island Southern's Henderson Creek trestle north of Woodvale, Ill., 5 miles out of Monmouth, feels the weight of car 305, an "Electric Pullman" Niles built for the WB&A.

passenger service ended there in 1926.

Three of the Electric Pullmans were sold to Utah's Bamberger Electric, while four others were converted to trailers and sold to Oregon Electric.

Niles built similar cars for the Chicago Lake Shore & South Bend in 1908. Another 6,600-volt A.C. property in its early days (before becoming the D.C. Chicago South Shore & South Bend in the 1920s), CLS&SB received 23 powerful cars measuring 57 and 60 feet long and tipping the scales at between 55 and 56 tons each.

Oregon Electric, linking Portland and Eugene, had bought some Niles equip-

ment directly from the builder before acquiring the ex-WB&A cars as trailers to supplement its fleet, which numbered nearly 180 passenger cars by the early 1910s. In fact, two of the finest cars Niles ever produced—a pair of parlor-observations constructed in 1910—graced select OE trains of the day. A 1918 timetable indicated that the cars made four round trips daily. A small buffet section was included in the 40-seat, extra-fare cars; in addition, the lead truck was equipped with two traction motors to help the trains keep to schedule. At 62½ feet long, the cars were on the scale of the WB&A Electric Pullmans.



Two of Chicago Lake Shore & South Bend's 57-foot Niles cars stand at East Chicago, Ind., in the aftermath of the blizzard of 1918.



Another Niles classic, luxurious parlor-observation *Sacajawea*, complete with striped awning, brass railing, and drumhead, brings up the rear of an Oregon Electric train in the early 1910s.

3. HOT ROD HEAVYWEIGHT



Painted blue and white with red and gold trim, Galveston-Houston 100-series cars are a striking sight on Houston's Texas Avenue circa 1925.

Before Samuel Insull made his massive investments in Chicago's North Shore and South Shore lines, the traction speed crown belonged to Galveston-Houston Electric. GHE had a superb physical plant; the company's newsletter was called *The Tangent* in honor of its 34 miles of line without a curve. In fact, there were only six curves on the entire 50.5-mile line between its namesake cities.

GHE was one of several traction properties managed by the Massachusetts engineering firm Stone & Webster.

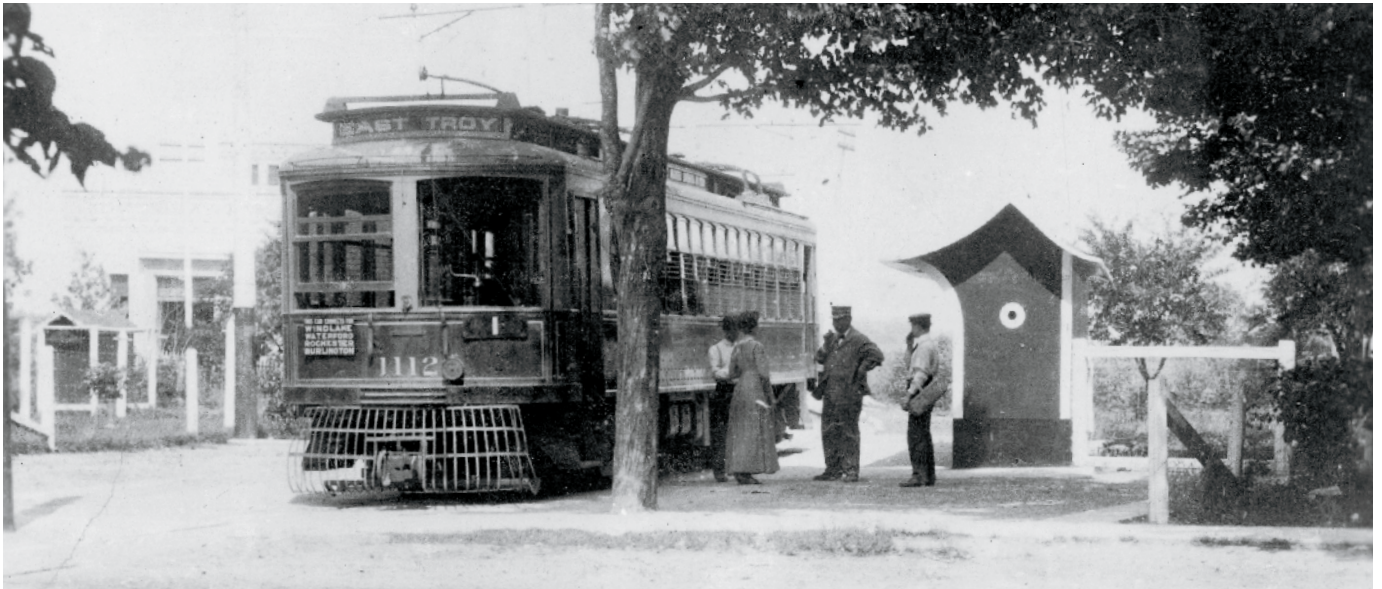
In 1911, GHE received 10 cars from Cincinnati Car Co.; they were built to specifications S&W also used in procuring cars for Northern Texas Traction and Pacific Northwest Traction. But the GHE cars could stretch their legs! Equipped with four 75 h.p. motors the builder had developed in 1905 specifically for use on "heavy, high-speed motor cars," each 36-ton car was capable of 60 mph. With arched windows, railroad roofs, and deeply curved ends, they were classics of the age of wood interurban construction.

GHE name trains like the *Houston*

Rocket, the 11 p.m. *Moonbeam*, and the midnight *Nighthawk* could make the 50-mile run in as little as 75 minutes, working out to a 40 mph average speed. This performance was sufficient to garner GHE the top position in *Electric Traction* magazine's interurban speed contest in both 1925 and '26.

The 100-series cars remained the mainstay of GHE's operation, supplemented by a few secondhand cars, until the last trains ran in 1936. A suburban operation to Houston's Park Place neighborhood lasted a few years longer.

4. METAMORPHOSIS IN MILWAUKEE



TM car 1112 displays its as-built look—two front windows, deck roof, tall side windows—at the original East Troy station. CLASSIC TRAINS collection

A few early interurban designs drew on streetcar practices, incorporating deck roofs, individual windows, etc. Between 1903 and 1910 three builders (St. Louis Car, McGuire-Cummings, and Kuhlman) produced similar cars with these attributes and a unique two-window end design for The Milwaukee Electric Railway & Light Co. (“TM”); Terre Haute Traction & Light; and Wisconsin Traction, Light, Heat & Power. TM had 100 such cars, while THT&L and WTLH&P each had 4.

The THT&L cars passed to the Terre Haute, Indianapolis & Eastern, which gave them a modest rebuild, but successor Indiana Railroad scrapped them.

In one of the most dramatic make-overs in interurban history, TM’s Cold Spring Shops in Milwaukee transformed 14 of the 1909 1100-series Kuhlman’s during 1926–27. Each 64-seat coach became a 48-seat chair car. End and side window arrangements were changed. Railroad roofs replaced deck roofs. The old cars had been good for 55 mph; rebuilt, they had a top speed of 70, which TM used to advantage on newly built rapid transit and belt lines around cities.

TM acquired the four WTLH&P cars in 1924 and later gave them a similar treatment, and in 1927 TM ordered four all-steel cars of this same basic design from St. Louis Car.

Of the chair cars, the only survivor is TM 1129 (ex-WTLH&P 104), sold to Ontario’s London & Port Stanley in 1941 and now at the Illinois Railway Museum.



TM 1113 displays the classic steel interurban appearance of the rebuilt 1100s. The motorman looks back impatiently as passengers load at Waukesha in October 1948. W. B. Cox



The Milwaukee Electric sold four 1100s to Ontario’s London & Port Stanley in 1941. L&PS motor 16 (ex-TM 1129) and trailer 23 (1135) are at St. Thomas, Ont., in 1950. R. V. Mehlenbeck



5. ULTIMATE LIGHTWEIGHTS

The interurban industry fought back against the automobile with lighter, faster, more comfortable cars. Developed at the start of the 1930s, these designs predated streamlining on the steam railroads. Among the finest lightweights were 55 cars bought by two lines in Ohio and Indiana.

Soon after its 1930 formation by merger of several roads, Cincinnati & Lake Erie, under the leadership of finance professor and innovative electric railway manager Dr. Thomas Conway, ordered from Cincinnati Car Co. 20 cars of a new design. Partial aluminum construction saved weight (and consumed less power), while the interiors of the cars, 10 of which had rear-end solarium lounges, were smart and modern. Carrying train

names like *Red Comet*, *Rocket*, and *Scarlet Wings*, the cars, which C&LE called “Red Devils,” attracted considerable public and media attention. In a famous stunt, a Red Devil attained a reputed 97 mph to beat an airplane in a race.

But the luster soon faded as C&LE’s connection to Detroit (via the Eastern Michigan Railway) was severed in 1932. In a similar vein, Lake Shore Electric’s 1938 abandonment cut C&LE’s link to Cleveland. The loss of these connections was devastating, especially to C&LE’s next-morning freight delivery program.

Indiana Railroad (also the product of a 1930 multi-road merger) borrowed one of the C&LE cars for tests in March 1931. Equipped with the heavier, better-riding Commonwealth “Equalized Swing Mo-

tion Truck” and the GE706b traction motors that IR planned to use on its own high-speeds, the test car proved the concept to the Indiana. The road placed orders with Pullman-Standard and American Car & Foundry for 35 cars, which began arriving in late summer 1931. Another enhancement on the C&LE design included provision for multiple-unit operation in trains of up to three cars. IR reported time savings of as much as 30 to 50 minutes over the times posted by heavyweight equipment on the Fort Wayne and Louisville lines.

But the lightweights could only postpone the inevitable. IR’s fate was sealed by the combination of the 1937 recession, increasing miles of paved roads and private vehicle usage, as well as the Secu-



C&LE 125, one of the 10 Cincinnati-built Red Devils with a solarium lounge at the rear, is at Springfield, Ohio, during a Cincinnati–Columbus *Golden Eagle* run in May 1936.



Passengers step aboard Indiana Railroad car 78, working a Muncie–Indianapolis run at Chesterfield, Ind., in June 1940. A head-on collision involving this car in September 1941 resulted in the end of passenger service on IR lines. John F. Cook



Now working for the Cedar Rapids & Iowa City, former C&LE lightweights congregate near Cedar Rapids Union Station, visible in the background, in May 1953. W. C. "Bill" Janssen

rities & Exchange Commission order for the dissolution of IR's parent, Samuel In-sull's Midland United holding company.

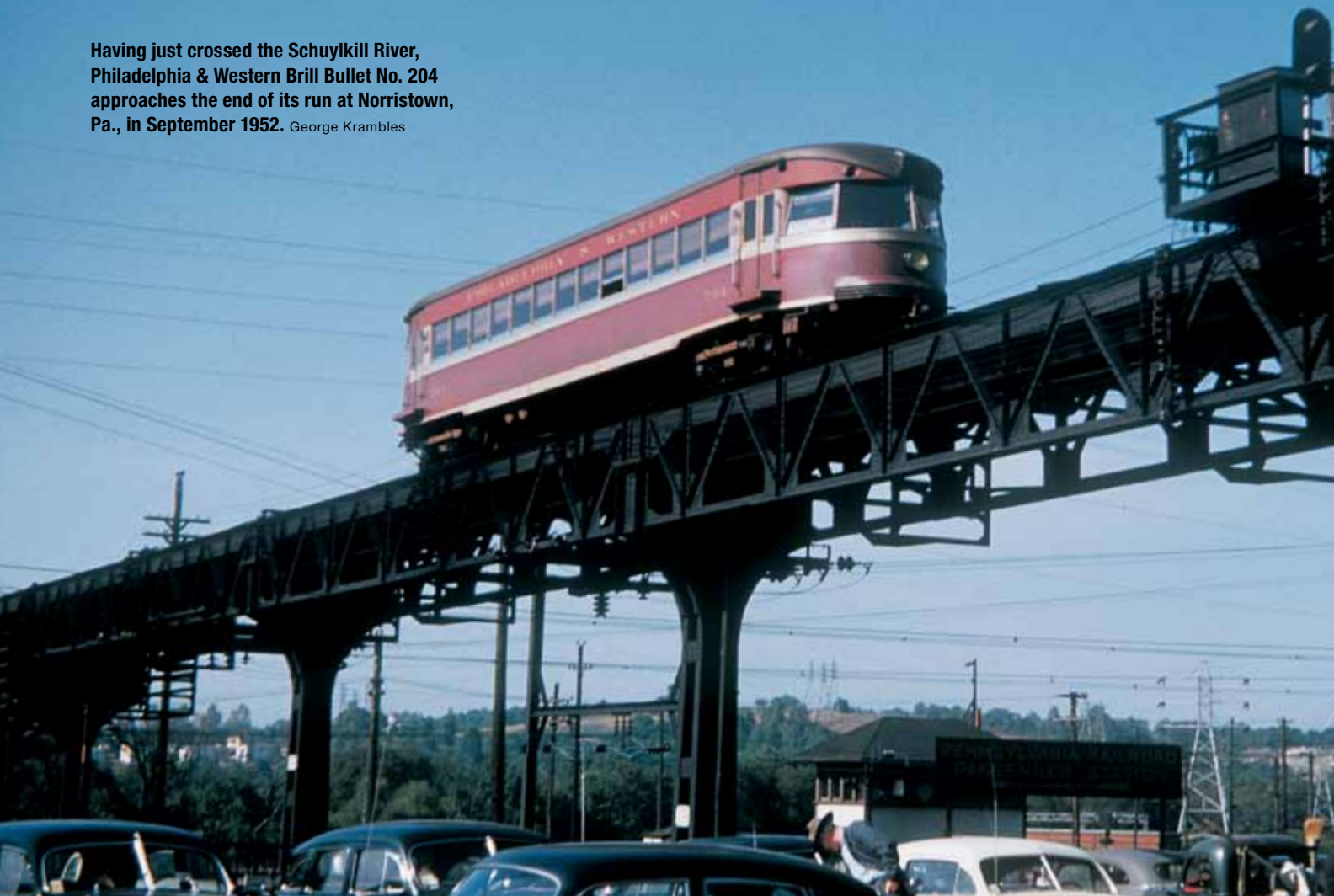
Between 1938 and '41 the abandonment of the C&LE and IR flooded the market with these nearly new lightweights. The IR cars were available for \$1,000 each. Traction authority Bill Janssen later observed that Illinois Terminal could have bought 1,000 of the lightweights for what it later paid for its three ill-fated postwar streamlined trains.

Thirteen of the 20 C&LE cars went to Lehigh Valley Transit, and 6 went to the Cedar Rapids & Iowa City (Crandic). Just two IR cars were sold for continued use, one each to LVT and Crandic. Four ex-C&LE cars were preserved after use on Crandic, as were both of the ex-IR cars.



Having just met a sister car at Brush siding near Norristown, Pa., on the Lehigh Valley Transit, an ex-C&LE high-speed car rolls toward Philadelphia in September 1948. George Krambles

Having just crossed the Schuylkill River, Philadelphia & Western Brill Bullet No. 204 approaches the end of its run at Norristown, Pa., in September 1952. George Krambles



6. BRILL'S SPEEDING BULLETS

Cincinnati Car Co. was not alone in developing lightweight, high-speed electric railway cars—the J. G. Brill Co. of Philadelphia was also a player. The connection between Brill and Cincinnati's work was Dr. Thomas Conway. He had established his credentials in the early 1920s on the Chicago Aurora & Elgin—revenues rose 66 percent in the first four years of his time on the road—and followed this up with a 22 percent increase in revenues in his first four years on the Cincinnati, Hamilton & Dayton interurban he used as the principal component in assembling the C&LE.

The Philadelphia & Western was a third-rail-powered line that ran northwest from a terminal on the far west side of Philadelphia. Challenged by the electrification of Pennsylvania Railroad and Reading Company suburban lines to Norristown, P&W decided to drastically improve its service. It turned to Conway.

In 1930, Conway's management team

at the P&W arranged for C&LE Red Devil car 127 to be tested on both the P&W and the Lehigh Valley Transit, whose trains used the P&W to reach Philadelphia. It showed what was possible, and the next step was to work on aerodynamics and conclude what else could be done to reduce operating costs. The result was the Brill "Bullet."

As developed for P&W, this was a 50-foot 6-inch, double-ended car seating 56 riders. Thanks to a liberal use of aluminum in their construction, the Bullets weighed just 26½ tons; packing four 100 h.p. traction motors, each car offered a staggering 15.1 h.p. per ton. The 10 Bullets did the trick, saving the P&W, which survives today as SEPTA's Route 100. On top of that, most of the Bullets operated—at high speeds, over a demanding right of way, making frequent stops—for nearly 60 years.

Although Brill may have hoped to sell many more Bullets, the design came

along at a time when both the economy and the interurban industry were in steep decline. In 1932, the industry experienced its peak year in terms of miles abandoned, when 1,300 miles of track ceased operations. In spite of this, the 33-mile Fonda, Johnstown & Gloversville, which ran west from Schenectady, N.Y., took the plunge and bought five single-end Bullets.

The FJ&G cars were slightly shorter



Bamberger 128, an ex-FJ&G Bullet, works at Salt Lake City in September 1950. H. M. Stange



7. PARLOR-CAR PERFECTION



Just arrived from Marion, Ohio, heavy steel parlor car 500 of the Columbus, Delaware & Marion cuts a formidable figure at the Columbus interurban terminal in 1931. W. B. Cox

Perhaps the apogee of the heavy steel interurban came in 1926 when American Car & Foundry built two magnificent parlor cars for Ohio's Columbus, Delaware & Marion.

Based on a 1923 ACF design for parlor-buffet cars built for Interstate Public Service Co., CD&M Nos. 500 and 501 contained 27 parlor seats plus an 8-seat smoker section, all wrapped in a stunning red and cream livery that earned the cars their "Redbird" nickname. The 60-foot-long, 46-ton cars were equipped with four 145 h.p. Westinghouse motors, giving them an impressive 12.6 h.p./ton.

CD&M put these fast beauties to good use, averaging 40.4 mph on its 67-mile express runs, according to a September 1930 timetable. The expresses were still

named in this timetable, with the *Capitols* operating south to Columbus and the *Northerns* running in the opposite direction. Train names were gone by the January 1, 1931, timetable, but CD&M still operated 11 local trains and 5 parlor car expresses to Columbus, with 9 locals and 7 expresses out of the state capital.

Connections to other interurbans in Columbus were important to CD&M, though one by one they fell by the wayside as the Depression took its toll. The abandonments of the Scioto Valley Traction in September 1930 and the Cleveland, Southwestern & Columbus four months later weakened the CD&M. With the CD&M's abandonment on August 23, 1933, the Cincinnati & Lake Erie became the last interurban in Columbus.

than the P&W's, measuring 46 feet 11 inches and seating 48. With motors rated at 200 h.p. and an overall weight of 21.1 tons, these cars boasted a respectable 9.5 h.p./ton. FJ&G was able to cut about 10 percent off the one-way running time once the Brills replaced its old wood-and-steel cars. However, the condemnation of a bridge into Schenectady killed most of FJ&G's traffic base, and the line ended electric operations in 1938.

FJ&G's five Bullets were returned to Brill, which sold them to Utah's Bamberger Railroad the following year. BRR had just emerged from bankruptcy, and the management's interest in the new cars was part of an overall program of modernization. This prepared the road for World War II, during which its passenger revenues increased nearly five-fold. Nevertheless, BRR ceased passenger operations in September 1952.

Two of the FJ&G/BRR Bullets survive, along with seven P&W cars.

END OF AN ERA

The final three North American interurban orders embodied distinct approaches to car design. Chicago Aurora & Elgin Nos. 450–459 (St. Louis, 1945) possessed a concave-convex side section to give passengers more room on a car that could still fit through "L" platforms; they lasted until CA&E quit in 1957. In Ontario, Grand River Railway combine 626 (National Steel/GRR, 1947–48) followed 1920s practice; it ran just 7 years. Illinois Terminal in 1946 ordered from St. Louis eight cars to be used on a trio of new named trains. Delivered in 1948, the three combines, two coaches, and three coach-dinette-observations were the near-equals of steam-road streamliners in dimensions and appointments. Baset by truck and clearance issues, the streamliners never operated as intended, and they died with IT's intercity service in 1956.



From left: Chicago Aurora & Eastern coach 452, Grand River combine 626, and Illinois Terminal streamliner 300.

8. SOUTH SHORE'S LONG-SERVING STEELS



Four lengthened South Shore cars arrive at the road's terminal adjacent to IC's Randolph Street Station in Chicago in March 1957. W. C. Janssen

The transformation by utilities magnate Samuel Insull of the bankrupt Chicago Lake Shore & South Bend, which he bought at auction on June 29, 1925, into the substantial and profitable Chicago South Shore & South Bend was a herculean effort by any measure. Within six months, a 900-man workforce was engaged in the complete rehabilitation of the property.

A major part of this effort was conversion of the power system from the original, unsatisfactory 6,600-volt A.C. to 1,500-volt D.C. In addition, the entire main line was resurfaced, and the west end was upgraded from a mix of 70- and 80-lb. rail to 100-lb. iron from Hammond, Ind., to Kensington on Chicago's South Side. Perhaps most important, the South Shore gained trackage rights from Kensington to downtown Chicago over the Illinois Central, which was electrifying its suburban service with a 1,500-volt D.C. system.

Transforming the electrical system involved the reuse of many of the wood

poles from the A.C. electrification, which now supported steel trusses from which catenary was suspended. New, adjustable galvanized brackets were used on the single-track sections, while a one-mile, double-track stretch was rebuilt into the famed "Ideal Section" using galvanized bridges on a 300-foot spacing. The physical plant improvements paid off, both by reducing operations and maintenance expenses and also leading to much-improved service, as measured by a 24 percent increase in on-time operations in the two years following the CSS&SB takeover.

The South Shore converted some of the old Lake Shore wood cars to D.C. operation, but this was in interim step before the arrival of a fleet of new steel cars. Delivered from Pullman in June 1926, the first 25 cars (10 combines and 15 coaches) were 60 feet long, weighed 60 tons, and carried four 200 h.p. motors—figures on par with full-sized multiple-unit equipment used on electrified steam railroads.

Operation over the IC tracks began

on August 29, 1926. A little over half a year later, South Shore ridership to and from Chicago had doubled.

All 25 of the steel cars were needed to handle these loads throughout the fall and winter of 1926. To deal with the surge in ridership, South Shore returned to Pullman for 20 additional cars: 10 motors and 10 trailers. These 1927-built cars incorporated many improvements over the first order, including an additional foot of length, bucket seats, and "Pull-



Orthochromatic film makes a line of new CSS&SB cars, led by No. 25, look dark in color. They were orange with maroon letterboards.

9. MOVING THE GOODS



Wide-windowed air-conditioned car 24 leads a Michigan City-bound train across the diamonds at IC's 115th Street-Kensington station in December 1980. Art Peterson

man-type” smoker sections. South Shore bought 18 additional cars, this time from Standard Steel, in 1929.

Although the Depression led to the discontinuance of parlor and dining car service on the South Shore, the road's fortunes took a dramatic upturn during World War II. Employment in the heavy industrial belt of Northwest Indiana swelled, which, coupled with restrictions on private auto usage, put the South Shore in an excellent position to capture new traffic. The road posted a 60 percent increase in passenger revenue between 1941 and '42.

Strapped for capacity, the CSS&SB appealed to the War Production Board, which granted authority to modernize and lengthen 10 cars by 16 feet each, boosting capacity by up to 30 seats per car. The road's shops at Michigan City, Ind., performed the work during 1942-43. Passenger revenues increased 40 percent in those two years, with a total of 4.7 million riders carried.

The improvement program continued into the postwar era. By the end of 1946, 23 cars had been stretched. In 1947 the road added air-conditioning and wide picture windows to the improvement package, and later sent some of the wartime rebuilds back to the shop for the full treatment.

South Shore's sturdy 1920s-vintage cars rolled on until the end of the steel car era on the road. In fact, car 25 from the class of '27 was used to haul guests to the dedication ceremony for the new Nippon Sharyo-built stainless-steel M.U.'s on October 25, 1982, 11 months before the old cars' last run.

The South Shore cars' late retirement date and the growth in the preservation movement meant that many examples were saved at numerous locations around the Midwest and beyond.



Top: North Shore box motors are loaded with LCL freight at the Montrose freight house in Chicago in 1927; heavy, hinged doors on the car at left identify it as one of the road's four refrigerated trailers. Above: Twin box motors head up a "ferry truck" piggyback train in 1928.

If there was a freight or less-than-carload (LCL) market to be tapped, interurbans usually didn't take too long to respond. Such traffic was generally accommodated in combination coach-baggage cars or in "box motors," cars with wide side doors in the manner of a boxcar and operating controls at the ends. Sometimes called express cars, box motors might run singly, in multiple with other box motors, towing similar-looking but unpowered box trailers, or as locomotives pulling trains of standard freight cars.

After becoming part of Samuel Insull's utilities empire in 1916, the Chicago North Shore & Milwaukee continued its predecessor's practice of soliciting LCL and carload business. New steel combines and 50-ton GE steeple-cab locomotives were part of the road's early equipment orders.

The North Shore actively sought out new markets, including the delivery of Chicago newspapers to the northern suburbs. As part of the 1919 deal to secure trackage rights over the rapid transit "L" lines to downtown Chicago, the North Shore also gained the use of the grade-level freight house at Montrose

Avenue in Chicago.

Under the "Merchandise Dispatch" (MD) banner, the North Shore continued to improve its freight service and equipment. The road's typical passenger-car architecture, characterized by arched roofs and deeply curved ends, was carried over into its MD motors. The North Shore eventually amassed a fleet of some three dozen 50-foot box motors, plus several trailers. Most were built by Cincinnati Car Co. in 1920, '22, and '24.

Opening of the Skokie Valley Route in 1926, with its easy curves and generous clearances, allowed NSL to engage more actively in mainline interchange freight service and to develop "ferry truck" service, one of the first piggyback operations. The MD motors were drafted into locomotive duty during World War II, which also saw the North Shore lease Chicago Rapid Transit's two steeple-cab locomotives. In addition, the North Shore picked up an ex-Arkansas Valley steeple-cab to further increase its freight-hauling capacity.

With the demise of both the ferry truck and LCL services in 1947, there was little need for the MD fleet, and most of the cars were off the roster by 1950.

10. COMING FULL CIRCLE



Colorful Georgia Power Co. curved-sides 495 and 496, built for Indianapolis & Southeastern, meet at Avondale, Ga., in 1942. Georgia Power, which had a total of 19 new and secondhand curved-sides, operated lines from Atlanta to Marietta and Stone Mountain. W. C. Janssen



The future Georgia Power 496 (top photo) was built in 1929 as I&SE parlor 255, seen in a builder photo. When I&SE closed, the car went to Tennessee's Nashville-Franklin Railway, then to GP.

It took the interurban industry less than the span of one generation to return to its carbuilding roots in resuming the use of streetcar-like practices for many of the lightweight car designs. As early as 1918, Cincinnati was building lightweights that followed then-current streetcar practices. But the car-

builder didn't stop the process there: Its engineers developed the famous curved-side design in 1922 in response to a client's particular requirements for a lightweight interurban car.

The patented concave-convex curved-side panel provided greater strength in a lighter-weight thickness. In addition, use

of aluminum fittings further reduced overall weight so that the first cars measured 40 feet in length but weighed only 12½ tons. Thanks partly to wheels of just 26 inches in diameter, the cars had low floors, the end platforms being just 30 inches above the rails.

From an initial 10-car order for Kentucky Traction & Terminal, Cincinnati would ultimately build an even 400 curved-side cars over the next eight years. Configurations ranged from four-wheel city cars to 47-foot interurbans. The largest single order was for 75 cars for Cincinnati Street Railway's streetcar lines. There were also several single-car orders, the most unusual being a car that International Harvester's Deering Southwestern subsidiary fitted with a gas engine.

The big interurban companies found uses for the curved-sides as well, with Interstate Public Service ordering five cars in 1922 and the North Shore Line picking up a pair in 1923. That year saw the peak of curved-side production, with 159

cars built. On the North Shore, the curved-sides went to work on the Mundelein Branch, shuttling to and from Lake Bluff, Ill. With the opening of the Skokie Valley Route in 1926, the lighter Cincinnatis began operating alongside their heavier brethren. The difference in car weights was a factor of 2.5, and there was a substantial mismatch in floor heights with the typical North Shore car. The operating department became concerned for occupants of the curved-sides in the event of a collision with a standard car. The road stored the curved-sides at its Highwood Shops in 1932, and they never ran again.

The Indianapolis & Southeastern was created in 1929 out of the reorganization of the failed Indianapolis & Cincinnati Traction. When the I&CT opened in 1905, it was the first installation of Westinghouse's 3,300-volt A.C. electrification. The road stuck with the A.C. system until 1923 when it converted to a more conventional 600 volts D.C., using big steel cars unsuited to the moderately trafficked line. The road lost nearly \$180,000 in 1923, with passenger revenues off 10 percent from the previous year, and soon entered bankruptcy.

Bankruptcy led to reorganization as the Indianapolis & Southeastern in 1929. Light (about half the weight of the 1923 cars) Cincinnati curved-sides, outfitted as deluxe parlor cars, replaced the heavyweights. Numbered by fives, the 10 cars each wore distinctive pastel paint schemes and trim designs. I&SE followed up by leasing Cincinnati's 1926-built demonstrator car and then purchased two more curved-sides in 1929.

The combined effects of the Depression and greater miles of paved roads undid the I&SE, which shut down in 1932. The road's curved-sides went on to second and third careers in Indiana, Ohio, Wisconsin, Tennessee, and Georgia.

The ultimate curved-sides are the final two orders of 1929, which comprised a total of 15 cars for Monongahela West Penn and parent West Penn Railways. The dozen cars for West Penn could operate either as one-man or two-man cars and initially ran on the Allegheny Valley line connecting Aspinwall and Natrona, Pa., until this operation ended in 1937. Thereafter, they were transferred to Connellsville suburban service and remained there until 1952. Curved-sides survive in several museums. ■



North Shore Line used its curved-sides on shuttles to Mundelein, where No. 510 compares heights with standard car 701 in 1932, just before the Cincinnatis were stored. George Krambles



The wall contours of the curved-sides are apparent in this view inside the deluxe parlor car Cincinnati, built in 1926 for exhibit at a trade show. It became I&SE parlor 250 in 1929.



In another photo emphasizing the Cincinnati curved-sides' low profile, West Penn Railways 832 (now preserved at the Pennsylvania Trolley Museum in Arden, near Pittsburgh) stands in front of two older cars at Connellsville, Pa., in May 1952. W. C. Janssen