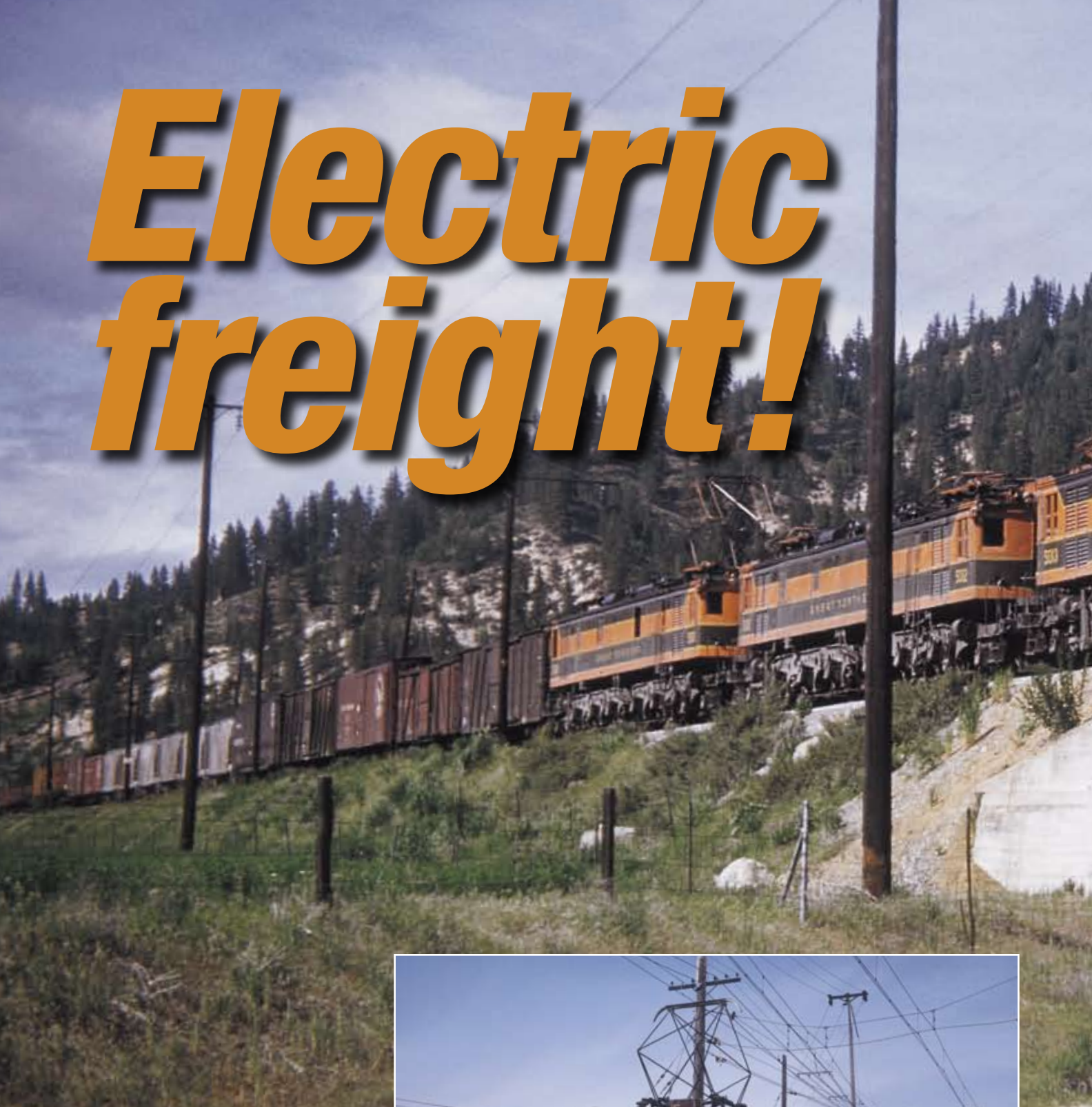


Electric freight!

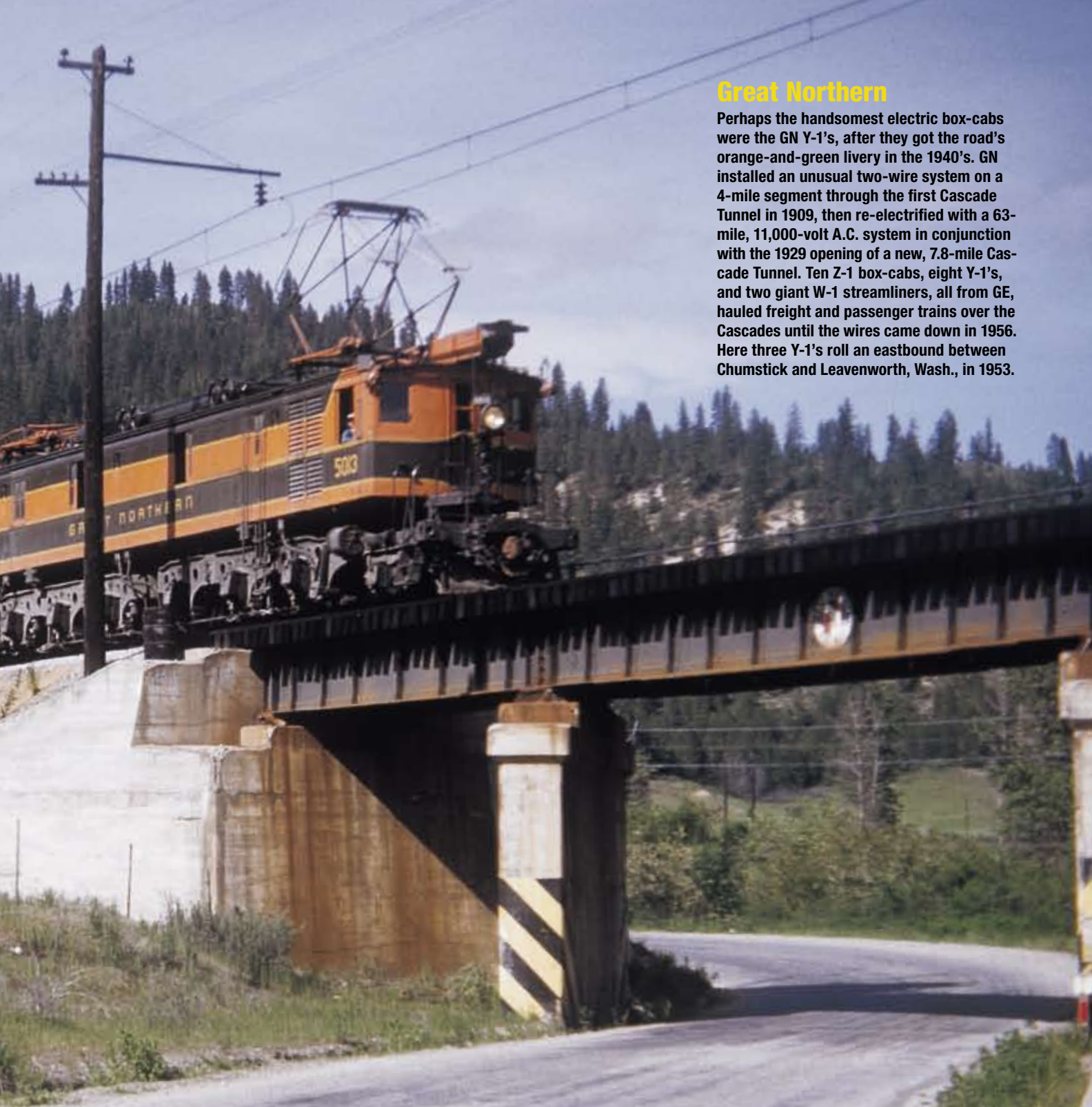


Niagara Junction

Although it was built by the Niagara Falls Power Co. in the 1890's, 11-mile switching road Niagara Junction used steam locomotives at first. Electrification, with 660-volt D.C. catenary and steeplecabs, came in 1913. New General Electric motors arrived in 1952 (that's one at right, in October '67), by which time the road was owned by NYC, Erie, and Lehigh Valley. NJ became part of Conrail in 1976, but electric operations lasted until '79; three of the units then went to Metro-North.



J. V. Clafin; J. David Ingles collection



Great Northern

Perhaps the handsomest electric box-cabs were the GN Y-1's, after they got the road's orange-and-green livery in the 1940's. GN installed an unusual two-wire system on a 4-mile segment through the first Cascade Tunnel in 1909, then re-electrified with a 63-mile, 11,000-volt A.C. system in conjunction with the 1929 opening of a new, 7.8-mile Cascade Tunnel. Ten Z-1 box-cabs, eight Y-1's, and two giant W-1 streamliners, all from GE, hauled freight and passenger trains over the Cascades until the wires came down in 1956. Here three Y-1's roll an eastbound between Chumstick and Leavenworth, Wash., in 1953.

George Krambles photo; Krambles-Peterson Archive collection

Diesels have had a monopoly hauling big-time U.S. freight trains for decades. Steam locomotives occasionally take a turn on tonnage, if only for show. Electrics power passenger trains in the Northeast—and all sorts of services in other countries. But heavy-duty, “steam-road” electrics have vanished from North American freight service. Here we present a photo gallery of 15 U.S. carriers that employed “juice jacks” to haul tonnage in the classic era.



R. E. Tobey

Boston & Maine

Opened in 1875, the Hoosac Tunnel in western Massachusetts was a 19th century engineering wonder whose 4¾-mile length and heavy traffic made it a prime candidate for electrification. This came in 1911 in the form of an 11,000-volt A.C. system similar to that of the New Haven, which controlled the B&M. Rather than swap power for the 7.9-mile trip under wire, freight and passenger trains were dragged, steam locomotive and all, through the tunnel by a fleet of seven Baldwin-Westinghouse box-cabs, also of New Haven pedigree. B&M went for diesels early, with the result that the Hoosac installation was the first major steam-road electrification to be shut down, in 1946. Not long before the plug was pulled, a freight powers across the Deerfield River toward the east portal of the tunnel.

Long Island Rail Road

New York-area passenger operations, not freight, prompted the LIRR's 650-volt D.C. electrification, which got started soon after the Pennsylvania Railroad gained control of the carrier. The first segment, opened in 1905 with M.U. cars, included a tunnel and underground terminal in Brooklyn. Five years later, service began to the new Penn Station in Manhattan, where LIRR's third rail met PRR's identical system, worked by class DD1 side-rod box-cabs. Primarily a commuter hauler, LIRR handled its relatively modest freight traffic with steam, diesel, and electric power. Here, an ex-PRR DD1 works a local freight at Rockville Centre in the mid-'50's, before the tracks were elevated. The flat car is fitted with pick-up shoes and connections to the locomotive to keep the train from getting stranded in third-rail gaps while switching. LIRR still buzzes with commuter M.U.'s, but freights are diesel.





B&O

Baltimore & Ohio

"America's first railroad" was also the first to commit to mainline electric traction. In 1891, when B&O began work on a tunnel under Baltimore's Howard Street on its Philadelphia-Washington line, electric street and interurban railways were barely past the novelty stage. Nevertheless, electrification seemed the best option for a 1.4-mile tunnel on a 0.8 percent grade through the heart of a city. Ungainly GE units began hauling trains in the 3.6-mile electric zone in 1895. A change from overhead to track-level third rail came in 1902, though 650-volts D.C. was retained. Unique but dowdy box-cabs began arriving in 1903, followed by more-conventional GE steeple-cabs in 1909. Having pulled a southbound freight through the tunnel, two steeple-cabs have cut off to escape into a center siding. A decade later, in 1952, diesels put the motors out of business.

John Krause





Above, George Krambles; below, Willis McCaleb; both from Krambles-Peterson Archive collection

New York Central

NYC's 660-volt D.C. third rail in and north of New York City made possible America's most celebrated railroad station. But NYC's 70-mile network was more than a means of getting passenger trains into Grand Central Terminal, which opened in 1906. When electrification of the West Side (of Manhattan) freight line in 1931 added tonnage to the mission, NYC bought 42 class R-2 box-cab freighters from Alco-GE. To reach beyond third rail, Central also had 36 tri-power units (straight electric, diesel-electric, battery). The West Side line was de-electrified in 1959, by which time several R-2's and tri-powers had put in some years on NYC's other third-rail operation, in Detroit. Officially the Detroit River Tunnel Co., it had twin 1.6-mile tunnels linking Michigan Central in Detroit with Canada Southern in Windsor, Ontario; the 650-volt D.C. electrification totaled 4.5 route-miles. Before the New York units arrived, 12 Alco-GE steeple-cabs pulled freight and passenger trains through the tunnels and handled switching at Detroit's Michigan Central Station, where two R-2's (above) rested on February 1, 1953, the year diesels took over.



St. Clair Tunnel Co.

Having left Port Huron, Mich., a few minutes earlier, four compact box-cabs grind upgrade out of the St. Clair River tunnel and into Sarnia, Ontario, in about 1956. St. Clair Tunnel Co., a subsidiary of Canadian National predecessor Grand Trunk Railway, opened the 1.1-mile bore in 1891. Special 0-10-0T's hauled trains until 1908, when a 4.2-mile, 3300-volt A.C. system came on-line. The original half-dozen six-wheel Baldwin-Westinghouse units were joined by two ex-South Shore Line B-B's in 1927. The catenary came down in 1958, and CN opened a bigger replacement tunnel next to the old one in 1996.

Pennsylvania Railroad

The king of North American electrifications by all measures but route-miles was PRR's 11,000-volt A.C. network. Built in stages between 1915 and '38, Pennsy's 656-mile empire extended from New York to Washington and Harrisburg, Pa., with many branches and parallel main lines, some of which were freight-only. The emphasis was on commuters until the 1930's, when locomotives began joining the M.U. cars. The first big fleet, 92 box-cab and streamlined P5's, had problems at high speed, so they went into freight service. Then came the GG1, one of the best passenger designs ever. Regearred as varnish runs dwindled, many of the 139 G's became fine freight haulers. Sixty-six GE E44's replaced the P5's by 1965, but the G's lasted on freight until Conrail retired them in 1979 (CR dropped all electric freight in '81). Mixing speed and power, two GG1's gallop past Leaman Place, Pa., with an eastbound piggybacker in 1962.

Tom Gildersteeve





Tom Gildersleeve



Tom Gildersleeve

Milwaukee Road

Completed in 1909, the Milwaukee's Pacific Extension blended spectacular scenery, daring engineering, underdog-turned-lost-cause appeal, and the longest electrification on the continent. Harsh winter weather, tunnels, and five mountain ranges prompted the road to hang 3000-volt D.C. catenary. Harlowton, Mont., to Avery, Idaho, got wires in 1915-16, followed by Othello-Tacoma, Wash., in 1919-20 and into Seattle in 1927—663 route-miles in all, but with a 216-mile gap between the two sections. Forty-two GE twin-unit box-cabs handled freight; later, the pairs were regrouped into three- and four-unit sets, as this 1964 view of mid-train helpers on an eastbound east of Kittitas, Wash., shows. Four steeple-cabs switched yards, while passengers rode behind giant Baldwin-Westinghouse box-cabs and round-hooded GE "bipolars." A dozen streamlined GE "Little Joes," diverted from the Soviet Union, arrived in 1950; assigned to the Harlowton-Avery section, they were modified to m.u. with diesels. Aging equipment and shaky finances killed the current on the Coast Division in 1972 and the Rocky Mountain Division in '74; 6 years later, MILW quit the Extension altogether.

Butte, Anaconda & Pacific

The template for the Milwaukee Road project was BA&P's groundbreaking 37-mile, 2400-volt D.C. installation of 1913. While previous electrifications had been inspired by tunnel operation, smoke abatement in terminals, or high-density suburban traffic, the Montana copper hauler's installation was the first done primarily for economic reasons. It was also the first to use high-voltage D.C. catenary instead of low-voltage D.C. third rail or high-voltage A.C. catenary. BA&P's 28 sturdy GE box-cabs were joined in 1952 by a pair of road-switcher-style GE's. A new ore concentrator at Butte drastically cut traffic to Anaconda in the 1960's, and the road dieselized in 1967. Three years before the end, two box-cabs have loaded gondolas in tow at Butte.



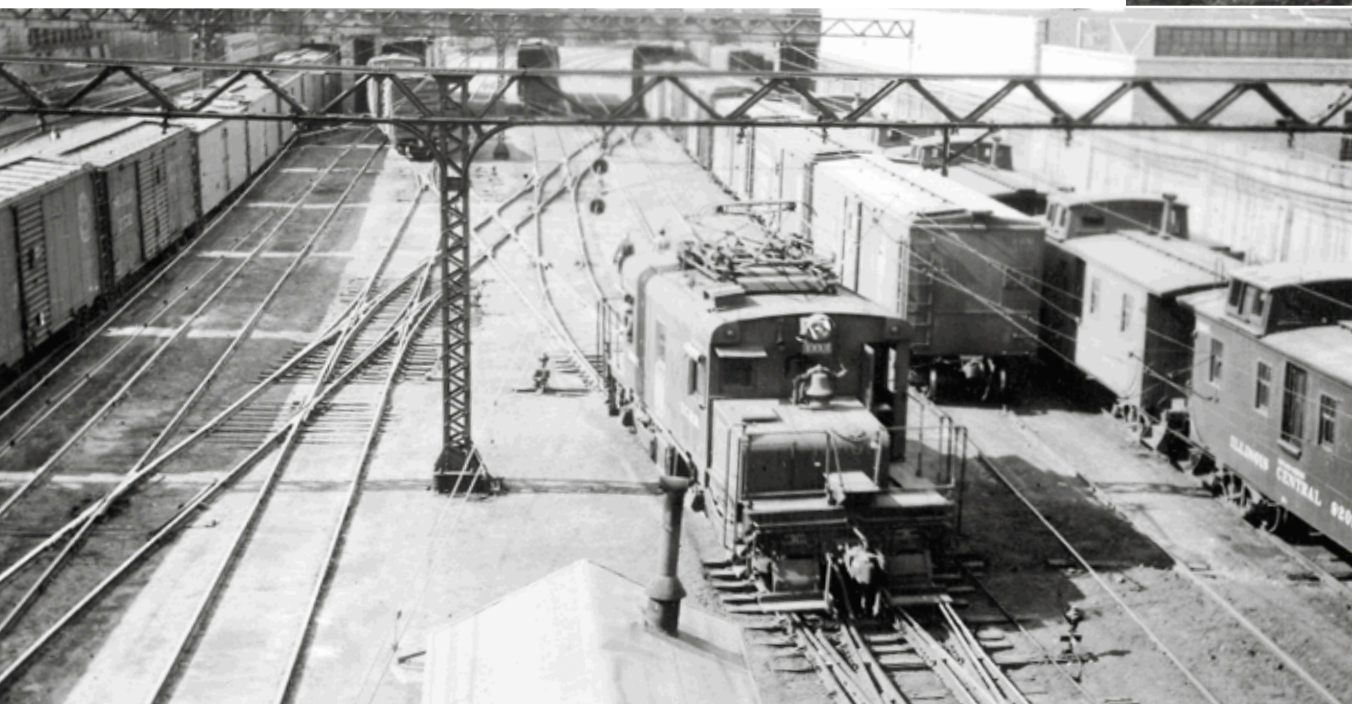
Forman H. Craton

Lackawanna Railroad

Extending west from Hoboken, N.J., the DL&W's 3000-volt D.C. electrification was all about New York commuters—almost. Opened in 1930-31, the 70-route-mile installation also reached freight yards in Jersey City and Secaucus. While commuters rode M.U. motor-trailer pairs, freight transfers moved the 4 miles between the yards, and through the Bergen Hill tunnel, behind two GE box-cabs. The yards themselves were not wired, so the units were set up to draw power from the catenary or storage batteries charged by an on-board diesel engine. The “tri-power” pair gave way to diesels in 1946. Pantograph down, No. 3502 is seen at Hoboken in 1930.

Illinois Central

Smoke-abatement ordinances forced the IC to electrify its Chicago suburban service in 1926. M.U.'s carried commuters on the 38-mile, 1500-volt D.C. system, but a requirement that freight operations north of Roosevelt Road be electrified by 1930 meant that the IC also rostered four 97-ton Baldwin-Westinghouse steeple-cabs. As diesels were improved, they were deemed better suited for the freight work (and were acceptable to the city fathers), so the IC sold its heavy steeple-cabs to interurban South Shore Line in 1941. In a northward view from just south of the Art Institute, IC 10001 is at work in June 1940.



Fred Fellow



N&W

Norfolk & Western

When 2 percent grades, 13-degree curves, a single-track tunnel, and 65,000 tons of coal traffic per day became too much for steam power on Elkhorn Mountain, N&W electrified. During 1915-24 the road installed 11,000-volt A.C. catenary over the Bluefield-laeger, W.Va., section of its main line, plus three short branches—a total of 56 route-miles. Motive power was 16 two-unit side-rod box-cabs: 12 3200 h.p. LC-1's from Baldwin-Westinghouse and 4 4750 h.p. LC-2's

from Alco-Westinghouse. Line improvements and a new, double-track Elkhorn tunnel (as well as superb 2-6-6-4's and 2-8-8-2's) allowed the retirement of the electric system in 1950, giving the N&W motors the unique distinction of being succeeded by steam. LC-1 2508 poses with a coal train near Maybeury, W.Va., in 1930. Today in the U.S., coal is the only commodity hauled by big electrics, on five mine-to-power plant railways (in Texas, New Mexico, Arizona, and Colorado-Utah).

More on our Web site

View movie clips from the Herron Rail Video files of big-time electric freight action at our Web site, www.classictrainsmag.com





W. C Janssen photo; Krambles-Peterson Archive collection

New Haven

Two ex-Virginian E33's, acquired from N&W in 1963, roll hoppers at South Haven, Conn., on March 26, 1966. The 3300 h.p. jobs were the last in a long line of motors to go to work for the New Haven, which wired 107 route-miles (New York-New Haven, plus branches) between 1907 and 1925. NH was the first road to go for juice in a big way, and the first to use the 11,000-volt A.C. system that several other carriers later adopted. Commuter and intercity passenger trains dominated the electric territory, but heavy freight traffic required the services of EF-1 box-cabs, EF-3 streamliners, and, after those had been retired, the E33's (which the NH called EF-4's). Amtrak extended the catenary to Boston in 2000—for Northeast Corridor passengers.



Virginian

Like fellow Pocahontas coal-hauler N&W, the Virginian sought to increase capacity with electrification. The system chosen, 11,000-volt A.C., was the same as N&W's, but on a grander scale, extending 135 miles from Roanoke, Va., to Mullens, W.Va. The 36 Alco-Westinghouse locomotives were near-duplicates of the N&W LC-2's, but grouped into 10 7125 h.p. three-unit sets, with a further 6 set up for single-unit operation. In 1948 the Virginian received four streamlined monsters from GE; each two-unit set was 150 feet long and weighed 517 tons. A third and final generation arrived in 1956-57 in the form of 12 GE E33 road-switchers. Traffic changes in the wake of the 1960 merger with N&W brought the end of the Virginian catenary (if not the E33's) in 1962. At Covel, W.Va., triple box-cabs push on a Tidewater-bound coal train in the mid-1950's. 🚂

B. L. Stone photo; Krambles-Peterson Archive collection