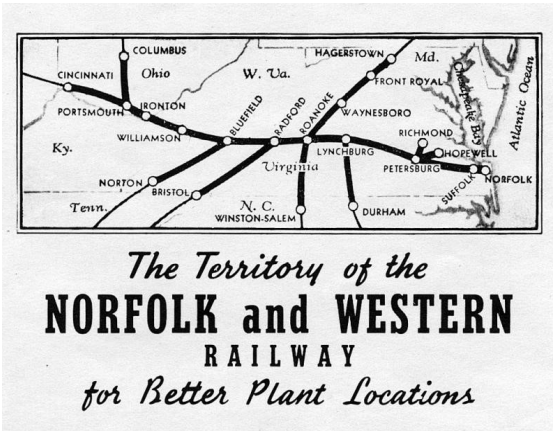


PART V - THE NORFOLK & WESTERN

The Norfolk & Western Railway (N&W)¹ did not connect Columbus with the Ohio Coal Counties to the east. With virtually no on-line coal within Ohio, and operating a single rail line that terminated in Columbus prior to 1964, the N&W only moved coal from distant points to Columbus during Central Ohio's great coal era (1880-1960). Nevertheless, the N&W likely carried more coal into Columbus than any other railroad during that period.

From the mid-1880s onward, the N&W was a premier coal hauler. Among the earliest railroads, with predecessors in operation by the late 1830s, the N&W was purposefully built to connect Virginia's seaports with the mineral wealth of that state's interior, and to reach beyond into the Midwest. The N&W's owners were also closely connected to the mining industry that developed the vast coal seams in Virginia and West Virginia, and with the shipping industry in Norfolk.



1950s poster advertising N&W's routes. This 2,126-mile configuration was essentially the N&W from 1890 until 1959, when the N&W merged in the Virginian Railway and began to expand rapidly with mergers, consolidations and acquisitions.²

Seeking Great Lakes and Midwest outlets for the railroad's mushrooming coal volumes in the late 1880s, the N&W planned to cross the Ohio River, targeting Cincinnati and Columbus. In 1890, two years before the N&W's own tracks entered Ohio, the company acquired the Scioto Valley Railroad running from Columbus through Portsmouth to Coal Grove, Ohio. The N&W completed its link to Columbus via this line with its Kenova Bridge in 1892. For the next 75 years, N&W's operation in Ohio was unchanging and simple - load coal in Appalachia, carry it to Columbus, deliver it to the Pennsylvania Railroad, Chesapeake & Ohio and New York Central, and pull the

¹ The N&W was originally the Norfolk & Western *Railroad* Company, a new name adopted by its immediate predecessor line the Atlantic, Mississippi & Ohio Railroad upon reorganization following a foreclosure in 1881. The company changed its name to the Norfolk & Western *Railway* Company during an 1896 reorganization, and traded under that name for 86 years until consolidation with the Southern Railway in 1982 to form the Norfolk Southern Corporation. See, *NWHS Time Line*: https://www.nwhs.org/nw_timeline.php

² In a "merger," two or more separate railroads combine, with only one entity surviving under common ownership of the merging companies' shareholders. In an "acquisition," one railroad acquires controlling shares of another, and thus can elect the acquired railroad's directors and control its operation. In a "consolidation," two or more railroads are combined, usually by a lease or trust arrangement, and operated as a single business under common management, but remain separately owned.

empty hoppers coming off those other railroads back to the mines. The interesting story is the vast scale, efficiency and elegance with which the N&W carried out this mission.



The Scioto Valley Railroad

The line that would eventually be the N&W's route to Columbus during the great coal era began as the Scioto Valley Railroad (SVR). This company was founded in 1875, and opened a standard-gauge track with 56-lb. rail between Columbus and Chillicothe via Circleville in 1876.³ Its north end terminated at a junction with the B&O-Panhandle track just west of Alum Creek, then called Caldwell, with SVR trains running over the B&O for the final two miles to Columbus. The SVR began its existence with four locomotives, eight passenger cars, and 55 freight cars.

The SVR built through to Portsmouth in January, 1878. Then in 1881, using the tracks of the Baltimore & Ohio predecessor Cincinnati, Washington & Baltimore Railroad for the 5.5 miles between Portsmouth and Sciotoville for annual rent of \$6,000, the road pushed southeast through Ironton, reaching Coal Grove, then known as Petersburg, in Lawrence County, opposite Ashland, Kentucky on the Ohio River. The distance from Columbus to Coal Grove was 131 miles. There are no challenging hills on the route of the SVR, with the controlling grade being 0.3 percent after some later improvements.⁴ The SVR built its own track between Portsmouth and Sciotoville in 1889, ending the B&O lease arrangement.



Etna Furnace, Ironton, established 1872, photo c. 1900.
<https://lawrencecountyohio.com/furnaces/etna-furnace/>

In that era, big iron furnaces were opening in Ironton, fed with local deposits of iron ore, limestone, coal, and coke⁵ produced from such coal. Coal Grove was a coaling station for river steamboats. It is likely most locally produced coal in Lawrence County was consumed or sold by these industries. By 1885, the SVR had 14 locomotives in service, and owned 347 cars, of which 143 were "coal cars," and leased an additional 19 "coal cars."⁶ The SVR was almost certainly carrying some coal up to Columbus and other cities along its line. But with this small fleet, the loading

³ For excellent detail of the formation and early financing and construction activities of the N&W predecessor Scioto Valley Railroad, see O.C. Hooper, *History of the City of Columbus, Ohio*, railroad excerpt on Columbus Railroads website: <http://www.columbusrailroads.com/new/pdf/clbs%20history%201920%20railroads.pdf>

⁴ *Norfolk and Western Railway, The Power Behind the Nation*: <https://www.youtube.com/watch?v=vMJ-7Miome8>

⁵ Coke is produced by "destructive distillation" of coal (heating it in a closed chamber). Like charcoal, used in early iron furnaces, made by burying burning wood to deprive it of oxygen, coke combusts at higher temperatures and efficiency needed for advanced iron and steel production.

⁶ *Poor's Manual of Railroads*, 1885, p. 927.

limits of cars of that era, and fill and discharge rates at coal mines and destination points, the SVR could not have moved more than a few hundred tons of coal per week to Columbus. More probably, the SVR was mainly shifting coal locally between mines, coking ovens and iron furnaces around Ironton, and the riverboat coaling docks at Coal Grove.

N&W - The Great Coal Railroad

Beyond Columbus, the N&W, a 2,126-mile railroad⁷ in its pre-merger state up through the late 1950s, was not really a huge rail empire like its main competitors, the Pennsylvania, B&O, C&O and New York Central. But to a much greater extent than any other big railroad, N&W obsessively invested in and refined its ability to carry its principal commodity - coal. This proved to be a successful strategy. While coal traffic had its own volume instability, labor disruptions and other travails over the decades, and other railroads had their struggles for survival in the turmoil of the Postwar era, the N&W paid a dividend to its shareholders virtually every year from 1901 forward.

The fascinating history of the N&W, which eventually acquired, merged or consolidated with over 200 other railroads, is told much more authoritatively and with more detail by many sources, especially the Norfolk & Western Historical Society.⁸ What follows here is a short summary only.

The primeval N&W ancestor City Point Railroad placed in service a nine-mile track in September, 1838 between the port of Hopewell, Virginia, on the James River near Richmond, to Petersburg, a distance of nine miles. In 1852, the Norfolk & Petersburg Railroad built a 123-mile line connecting the City Point Railroad with the seaport city of Norfolk. The Southside Railroad Company opened a 132-mile line between Petersburg and Lynchburg, in Central Virginia, in 1857. In that same year, the Virginia and Tennessee Railroad opened a 204-mile line from Lynchburg to Bristol, Tennessee.⁹ These were all initially laid as 5-foot gauge lines.

Similar to the experiences of the B&O and C&O, expansion of what would become the N&W was greatly disrupted by the Civil War, half the battles of which were fought over the areas where its predecessor railroads operated. To resume the railroad's westward expansion process, in June, 1870 the Virginia Legislature adopted "An act to authorize the formation of the Atlantic, Mississippi and Ohio Railroad" (AMO), which was for the purpose of merging, absorbing, and consolidating the Norfolk & Petersburg Railroad, Southside Railroad and Virginia & Tennessee Railroad, plus the as yet unconstructed Virginia & Kentucky Railroad, planning to build from Bristol to Cumberland Gap. Reportedly there was a great deal of corruption involved in this process, and many people served by these railroads vehemently opposed the merger.

⁷ For purpose of identification of N&W lines: (i) the Pocahontas Region includes lines from Princeton, West Virginia through Portsmouth, Ohio to Cincinnati and through Columbus to Lake Erie; (ii) the Scioto Division includes the portion of the Pocahontas Region west of Williamson WV, and within the Scioto Division: (iii) the Kenova District covers Williamson to Kenova, (iv) the Cincinnati District covers Portsmouth to Cincinnati; (v) the Columbus District covers Portsmouth to Columbus; and (vi) the Sandusky District covers Columbus to Sandusky. Like the C&O, N&W is Virginia-centric, and the direction on its lines from the Ohio River to Columbus is "west." See detailed .pdf 1965 color-coded map of the N&W System and interconnecting railroads:

<http://www.multimodalways.org/docs/railroads/companies/N&W/N&W%20Maps/N&W%20System%20Map%201965.pdf>

⁸ <https://www.nwhs.org> Also see: Adam Burns, *Railroads in America*, <https://www.american-rails.com/norfolk.html>

⁹ Virginia History Exchange, Ch. V, <http://vahistoryexchange.com/wp-content/uploads/2012/10/CHAPTER-5.pdf>

The AMO was placed in the hands of former Confederate General William "Little Billy" Mahone (1826-1895), a capable Virginia Military Institute graduate engineer but controversial railroad developer, politician and activist, who had been president of the Norfolk & Petersburg since 1860.¹⁰ Mahone came under great criticism for his financial dealings with the AMO, including capital raised in England, but did greatly improve its 428 miles of rail right of way and infrastructure.¹¹ However, hit by the Panic of 1873, the AMO defaulted upon its debts in 1874 and again in 1875, and went into receivership. The receiver put the line up for sale in May, 1879.¹²



Atlantic, Mississippi & Ohio Railroad President, and former Confederate General William "Little Billy" Mahone, c. 1881. <https://encyclopediavirginia.org/entries/mahone-william-1826-1895/> New settlements along the Norfolk & Petersburg, including Ivor and Waverly, were named by Mahone's wife Otelia (1835-1911), a devotee of Sir Walter Scott's writings. When the Mahones could not agree on the name for another settlement in Prince George County, Virginia, it was called "Disputanta." Local critics said "AM&O" stood for "All Mine & Otelia's."

A group of major Philadelphia bankers and rail investors organized as the "Norfolk & Western Railroad Company" surprisingly outbid a rival investor group organized by Mahone, and purchased the AMO for \$8.6 million plus assumption of \$4.9 million of debt. The buyers then recapitalized the company with \$25 million in new stock subscriptions plus \$11 million in new debt. However exaggerated the future earnings prospects of the N&W were, this bootstrapping of the AMO from \$13.5 million in arm's-length value in the receiver's sale to \$36 million for the same assets when settled in the N&W was both brilliant and highly-suspicious.

The mineral wealth along the N&W's existing and future lines as of 1881 was strongly suspected, but not yet really proved. Based on this expectancy, the N&W continued to push westward. The N&W and its major stockholders acquired controlling shares in other developing railroads in Western Virginia and Southern West Virginia. In May of 1882 the N&W was consolidated with the New River Railroad Company of Virginia, the New River Railroad Company of West Virginia, and the East River Railroad of West Virginia. These lines, including the 75-mile New River Extension northwest from Radford to Pocahontas, Virginia, had been established to reach prospective minerals production in that region.

¹⁰ Mahone was later Governor of Virginia and a U.S. Senator. Although a former slave owner, and having been accused of atrocities against black Union troops at the Battle of Petersburg, Mahone subsequently led the highly controversial multi-racial, bipartisan "Readjusters" movement, which sought to reduce postwar debt to enable restoration of public education and government services in Virginia in the late 1870s. He founded an institute dedicated to preparing teachers to educate former slaves, which later became Virginia State University.

¹¹ Stately hip-roofed N&W station buildings from Mahone's era are still called "Mahone Style" depots.

¹² Id., Ch. V.

Owners of various mining interests, including some with financial ties to the N&W such as holders of coal options originally held by the New River Railroad, Mining and Manufacturing Company, began to develop an enormous bituminous coal seam at Flat Top Mountain, near Pocahontas, after which this coal field was named. The New River Railroad shipped its first loads of Pocahontas coal in March of 1883, and carried 54,500 tons by the end of that year. By 1887, the railroad's annual coal loadings from Pocahontas reached one million tons, and this continued to grow almost exponentially. By 1906 the N&W's annual volume from this source was 6.7 million tons of coal, plus 1.8 million tons of coke produced in ovens at the mines in the area.¹³ This expanded substantially with the surge demands during World Wars I and II, with a dip in between during the Great Depression. By 1947, the N&W was loading 180,000 tons of bituminous coal per day, almost all from its Pocahontas and nearby Appalachian coalfield producers.¹⁴

N&W also built branches to Norton, Virginia into the Clinch Valley Coalfield, and other branches reaching into Kentucky and areas of West Virginia tapping the Upper Buchanan and Kenova fields. The Virginian Railway, acquired by the N&W in 1959, reached additional major coal fields in Central West Virginia to the north of the N&W's route.

Most of the Pocahontas coal was on the West Virginia side. Although West Virginia enacted laws to prevent railroads from vertically integrating with the coal industry, and the Sherman Antitrust Act of 1890 was designed to combat predatory monopolies by outlawing "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce," it would be another two decades before the federal government and courts, during Theodore Roosevelt's "trust busting" era, began to enforce these competition laws effectively. In the meantime, the N&W's Philadelphia investors established the Flat Top Coal Land Association, which bought up mineral rights and financed many coal mines in the area. This entity was later directly held by the N&W itself, changing its name to the Pocahontas Coal & Coke Company.

Pocahontas Coal

The Pocahontas Coalfield blankets most of Mercer and McDowell Counties, West Virginia and Tazewell County, Virginia. First investigated in the early 1880s, this group of coal seams ranges over about 900 square miles, and is more than 13 feet thick in places, yielding top quality bituminous coal with a very high heat content at 15,000 Btu/lb.

West Virginia coal production records compiled by county show McDowell County alone accounting for 24.5 million tons of coal loaded in 1945.¹⁵ Other West Virginia counties reached by the N&W also had hundreds of active mines. Adjoining Wise and Tazewell Counties in Virginia reached production of over 20 million tons annually during World War II.¹⁶ The adjacent Thacker and Pond Creek coal seams

¹³ Bruce Harper's *Norfolk & Western and Virginian Info*, including excerpt from the July 25, 1907, edition of the *Manufacturers' Record*, Vol. LII, No. 2, pg. 33 <https://nwhistory.info/articles/PocahontasFlatTop.php>

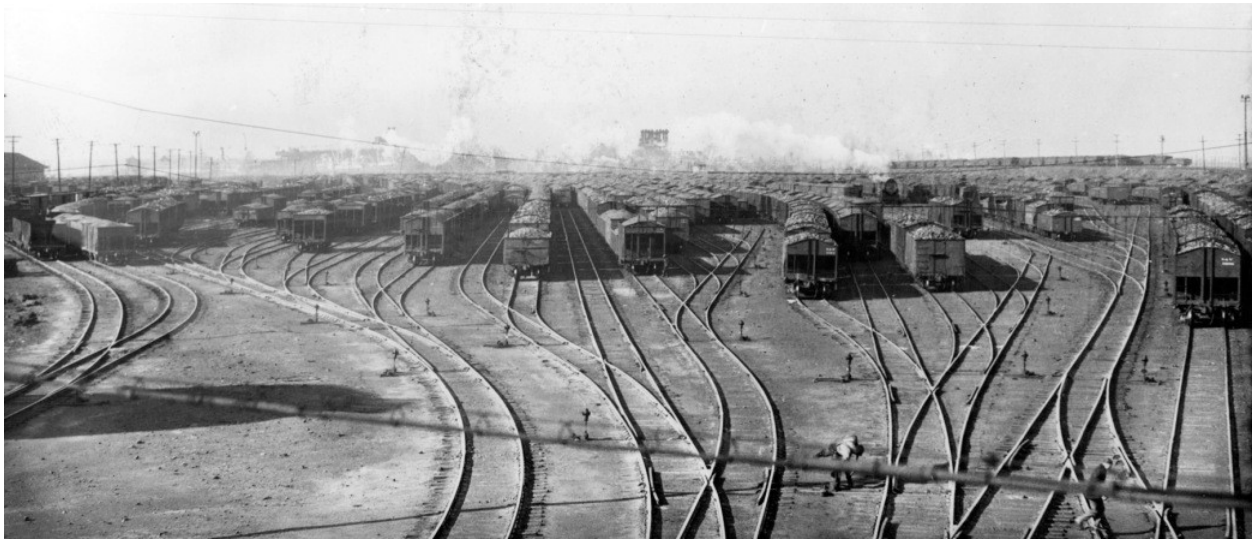
¹⁴ Eric A. Grubb, *Coal Supports The Norfolk & Western*, *Trains Magazine*, Nov. 1947.

¹⁵ Data on West Virginia Coal production, by county and mine, 1883-2008: <https://minesafety.wv.gov/historical-statistical-data/historical-wv-coal-production/>

¹⁶ U.S. Geological Survey, *Coal Resources in Virginia*, 1952, pp. 42-3, <https://pubs.usgs.gov/circ/1952/0171/report.pdf>

in Pike County, Kentucky also accounted for massive quantities, with Eastern Kentucky coal loads peaking at over 60 million tons annually during World War II.¹⁷

Rail construction from the Pocahontas coalfields west toward the Ohio River from Bluefield, WV accelerated after the N&W completed its Elkhorn Tunnel through Flat Top Mountain in 1888. Then the N&W built across West Virginia through Leager and Williamson, reaching Kenova, on the Ohio River just west of Huntington. Letters from N&W President F.J. Kimball during this period indicate the railroad had been caught up in the deadly Hatfield-Coy feud going on along the Tug Fork River, where its tracks were being built. The N&W laid out the grid for development of Kenova, which had originally been founded in 1859 and was shown as "Chattarwha" on N&W's 1889 route maps, but was later renamed for the three states adjoining the area, Kentucky, Ohio, and (West) Virginia. Even in advance of the tracks reaching Kenova, N&W's corporate planning documents were already referring to its next objective of reaching Columbus.



Norfolk & Western marine coal terminal and rail yard at Lambert's Point in Norfolk, Virginia, 1926. Sargeant Memorial Collection/Norfolk Public Library. <https://lambertspoint.wordpress.com/norfolk-western-railroad/>

The N&W was also rapidly vertically integrating with the ocean shipping industries at its eastern terminus. In 1882, the N&W obtained a charter from the Virginia Legislature for the Norfolk Terminal Company, which was authorized for "...ownership of land, the construction and operating of wharves, store-houses, cotton presses, grain elevators, chartering of vessels, etc...."¹⁸ The N&W raised financing in the several following years for expansion of a pier at Lambert's Point, within the City of Norfolk, acquiring 1.5 miles of waterfront and 480 acres of land, plus a 5.3-mile rail right of way to connect the N&W with the piers, and also built what would become a 100-track rail yard to receive their growing coal shipments. The company constructed an 894-ft. pier and modern coal loading equipment able to handle up to 3,500 tons per day. The N&W also

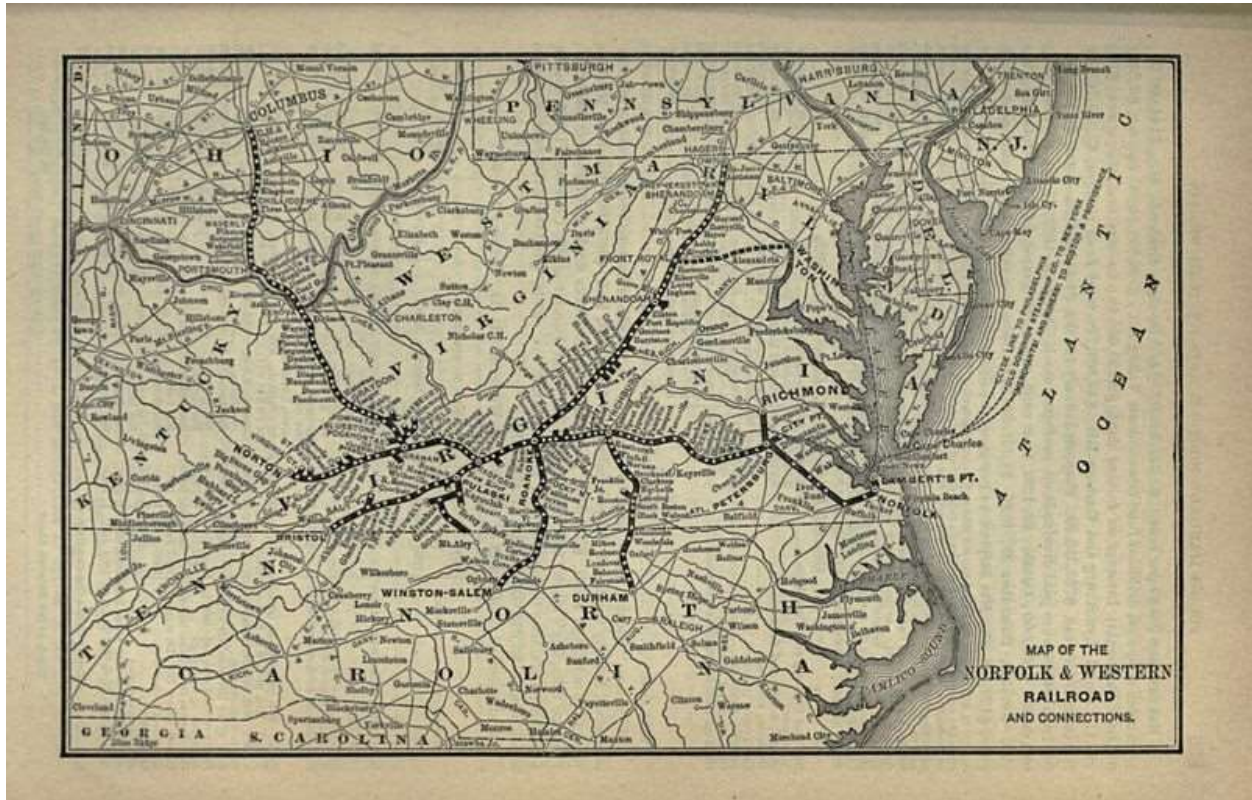
¹⁷ *Kentucky Coal Facts*,

[https://eec.ky.gov/Energy/Coal%20Facts%20%20Annual%20Editions/Kentucky%20Coal%20Facts%20-%202017th%20Edition%20\(2017\).pdf](https://eec.ky.gov/Energy/Coal%20Facts%20%20Annual%20Editions/Kentucky%20Coal%20Facts%20-%202017th%20Edition%20(2017).pdf)

¹⁸ Although it is now possible in all U.S. states for any person to form a corporation for 'all lawful purposes' on a same-day basis upon payment of a small fee, in the late 19th century incorporation still required a formal enactment of the state legislature, with stated limits of the activities in which the corporation was permitted to engage.

purchased shares of the Old Dominion Steamship Line, and bought barges for water transport of coal and other commodities. During the 1880s and 90s, much of the coal N&W delivered at Norfolk was used as fuel for steamships. The company also engaged profitably in land speculation in Norfolk, to the extreme displeasure of the state legislature.

In 1890, in addition to acquiring the SVR in Ohio, the N&W acquired from bankruptcy the Shenandoah Valley Railroad, running from Hagerstown, Maryland near the Pennsylvania border, to Roanoke, Virginia, originally built in the early 1880s to connect the N&W with Pennsylvania.



N&W System Railroad Map, 1893

Over its years of profitable operation, the N&W poured revenues back into constant upgrading of its main lines and branches. The rights of way in the Pocahontas Region were virtually all double track with nothing less than 130-lb. rail, with much of the line being 140-lb. rail.¹⁹ Facing very steep grades on its up-and-down route through Appalachian coal country, N&W turned to electrification. Between 1915 and 1924, N&W electrified 56 miles of its track between Iaeger and Bluefield, increasing the capacity of that segment with grades exceeding two percent and the 3,014-foot Elkhorn tunnel, at the top of a six-mile long 1.4 percent ruling grade.²⁰ A right-of-way re-engineering and a new tunnel opened in 1950 lowered the grade and eliminated the need for the electrification, and that section was placed back under steam power.

¹⁹ *Id.*

²⁰ See N&W Track Charts:

<http://www.multimodalways.org/docs/railroads/companies/N&W/N&W%20Track%20Charts/N&W%20Pocahontas%20District%20Track%20Chart%201-1-1968.pdf>

The N&W also took in house the building of the two things upon which it depended most - steam locomotives and hopper cars. After 1928, N&W designed and produced its own locomotives and coal hoppers in its Roanoke Shops. As discussed below, the N&W obsessed on and perfected enormous articulated locomotives suited to its unique system demands. These engines were efficient enough under N&W's advanced methods of care and management to fend off the diesels until the 1960s. Similarly, the N&W developed and evolved hopper designs from its HMs and HPs in 1910-11 up through the 100-ton H11s in the post-war era.²¹ Its Roanoke hopper assembly line turned out a new beauty every 34 minutes during working hours. This was a necessity as coal accounted for some two-thirds of N&W's revenues, and hoppers comprised 75 percent and more of its total car fleet. The Roanoke Shops continued in operation until 2020.

The N&W Takes Over the Scioto Valley Line and Bridges the Ohio

Reports from the 1870s indicate the SVR suffered from lack of steady freight revenue. Agricultural freight was highly seasonal, there was little on-line manufacturing industry, and worst of all, the southeast end of the line had no rail interconnection. The SVR and C&O, which had reached the opposite shore of the Ohio River, tried to connect using a rail car ferry, a barge moved by a river steamboat, but with a capacity of only three cars per trip, this was notably unsuccessful.

By 1885 the SVR defaulted on its senior debt and went into receivership under control of Collis P. Huntington, the Transcontinental Railroad tycoon, by then also in control of the nearby C&O. The receiver did raise additional capital, and during this time the SVR was improved with iron and stone bridges replacing wooden trestles, and regrading to reduce all but one short section below a maximum of 0.65 percent. In early 1890, the creditors foreclosed and reorganized the SVR into the Scioto Valley & New England Railroad Company (SV&NE), with a charter including authority to build lines to Toledo and to a point on the Pennsylvania state line in Trumbull County. The improbability of this diminutive and twice bankrupt railroad building through to Pennsylvania, much less New England, made the name seem hyperbolic. But under Huntington's crafty financial maneuvering, suddenly the SV&NE was signing allegedly lucrative long-term contracts with the C&O and its affiliates committing the latter to deliver all their business, if any, destined for New England and northern points to the SV&NE, assuming it ever built rail lines going near there.²² Whether the pretentious name change was designed to justify the contracts, or the contracts justified the name change is unclear. In any case, by February, 1890, following financial maneuvers by Huntington, the N&W purchased the SV&NE in exchange for 3,000,000 shares of N&W preferred stock.

At the time the N&W acquired the SV&NE, the N&W's track ended at Kenova, West Virginia. In 1890, the N&W contracted with the Edge Moor Bridge Company of Delaware to erect a bridge reaching nearly a mile across the town and the Ohio River. The original span, completed in 1892, was built as a single track structure, but its piers were 34 feet wide and the bridge segments had

²¹ N&W purchased some high-capacity six-axle gondolas, although not focusing on them as much the Virginian, C&O and other big coal railroads. *Ninety-Ton High Side Gondola Car*, Railway Age Gazette, Vol. 54, No. 25, June 20, 1913, pp. 14-191913. <https://nwhistory.info/articles/N&Wgondola.php>

²² *Poor's Manual of Railroads*, 1890, p. 338.

room to add a third set of trusses on the centerline to accommodate a second track.²³ Due to vastly increased loading gauge requirements by the time the span was upgraded in 1912-13, the third truss strategy proved unworkable. But N&W and Amercian Bridge Company designed a more robust set of four Pennsylvania through trusses and one Baltimore through truss which could be built around the outside and beneath the earlier structure without interrupting rail traffic.



View of 4,000-foot Kenova Bridge looking north into Ohio. The bridge, originally built in 1890-92 and rebuilt and double-tracked in 1913, is the longest span on the N&W system. There is an N&W legend that the bridge was targeted by German saboteurs in World War II, but evidence of this is thin.²⁴

In 1901, the N&W acquired the Cincinnati, Portsmouth & Virginia Railroad (CP&V), formerly the Cincinnati & Eastern Railroad built as a narrow gauge line in 1883, running to Cincinnati from a junction with the former SVR at Vera, several miles north of Portsmouth. This line, locally known as the "Pea Vine," was best known for steep grades, sharp curves and lack of shippers.²⁵ In 1913, N&W invested in a major new bridge across the Scioto River from Vera.

The N&W's original Columbus yard on the SVR was the Infirmary Yard, just north of Bannon, which was expanded in 1904 and eventually reached eight tracks and 720 cars' capacity. N&W extended the SVR line north of the B&O crossing and west toward Joyce Avenue, laying out an "L" shaped yard there in 1910.²⁶ The N&W's 27-stall roundhouse at Joyce Avenue, with a 115-ft.

²³ Kenova Railroad Bridge, history, technical and engineering information for 1892 bridge and 1913 rebuild: <https://historicbridges.org/bridges/browser/?bridgebrowser=wviregina/kenova/> Also see N&W history at: <https://bridgehunter.com/wv/wayne/bh44754/> and <https://theclio.com/entry/11594>

²⁴ Norfolk Southern promotional literature holds that during World War II, German saboteurs were arrested near the Kenova Bridge, following which Coast Guardsmen were assigned to protect the bridge for the balance of the war. https://web.archive.org/web/20130313165606/http://www.nscorp.com/nscportal/nscorp/Media/News%20Releases/2013/ns_100th_anniv_rail_link_ohio.html Independent verification for the former element of the story is unclear. Two sets of German saboteurs were arrested in the U.S., in New York and Chicago. Four of the Germans, who made a night landing in Florida from a submarine, had traveled by train from Jacksonville to Cincinnati, and thus might have passed over the bridge. But there is no independent reference to them being active in or arrested near the Kenova area. However, the Coast Guard sentries likely were deployed near this bridge and others following the arrests.

²⁵ Cincinnati & Eastern Abandonment, <https://abandonedonline.net/location/cincinnati-eastern-railroad/>

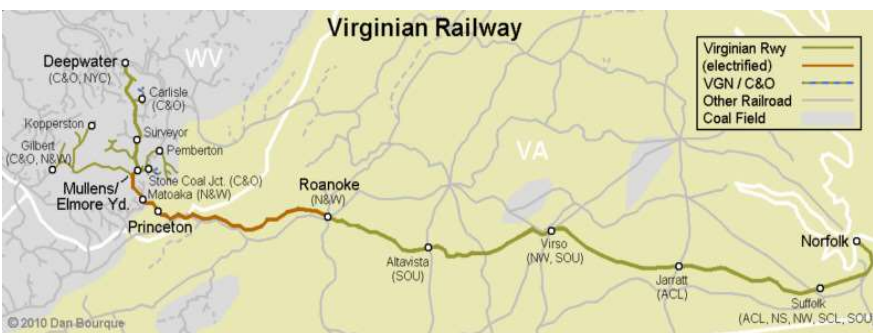
²⁶ <https://www.nwhs.org/archivesdb/detail.php?ID=200885> and <https://www.nwhs.org/archivesdb/detail.php?ID=195962>

turntable, was added in 1913,²⁷ and its bays were later extended to accommodate N&W's A and Y-class engines. In 1930, the N&W and PRR collaborated to build the ten-track, 1,162-car capacity coal transfer Pennor Yard just north of the original Joyce Avenue Yard. The PRR also leased four coal transfer tracks on the south side of Joyce Avenue Yard. The N&W added the coal-drag friendly 13-track, 2,180-car Watkins Yard between Bannon and Valley Crossing.

The former SVR route follows the Scioto River, with many curves, including a few that have speed restrictions, but the overall profile of the line is very accommodating to efficient haulage of long coal drags. As noted above, while the SVR was in receivership in the late 1880s, it was re-engineered significantly to remove problematic grades, reducing the controlling grade to 0.3 percent. The slope from Bannon up to Joyce Avenue was up to 0.7 percent, which presented difficulties restarting inbound trains halted at the busy at-grade crossing with the B&O and PRR at Alum Creek just north of Maryland Avenue. The N&W undertook a massive re-engineering of this section in 1928-31, raising the grade with 1,350,000 cubic yards of fill and building overpasses at major city streets and a viaduct over the B&O-Panhandle involving 30,000 cubic yards of concrete. This eliminated the rail crossing bottleneck and reduced the overall grade to 0.4 percent, moderating the curvature and expanding Joyce Avenue Yard to 3,980 cars' capacity.²⁸

Later Coal Era on the N&W, and Mergers and Acquisitions

After experiencing the efficiencies of combined operations with its rival Virginian Railway²⁹ during World War I, when the U.S. Railroad Administration took over and operated them as a single system for two years, the N&W tried to lease the Virginian in 1925. The arrangement was rejected by the Interstate Commerce Commission.



Route of the Virginian Railway. Completed in 1909, paralleling the N&W.

The Virginian was loading about 15 million tons of coal annually up through the post-World War II era. Its line was built to very high standards for coal haulage, with 131-lb. rail and its steepest section electrified. In December, 1959, the ICC permitted N&W to merge with the Virginian. After the merger, much of Virginian's westward-moving Appalachian coal, which had been

²⁷ See Columbus Railroads N&W pages for Joyce Avenue roundhouse history and details:

<http://www.columbusrailroads.com/N&W%20joyce%20ave.htm>

²⁸ N&W Magazine, February, 1931, <http://www.columbusrailroads.com/new/pdf/N&W%20mag%201931.pdf>

²⁹ The Virginian was built in 1905-9 by railroad developer William Page and his colorful financial partner Henry Huttleston Rogers. Rogers, who worked as a railroad brakeman in his teens, rose to control Standard Oil and become known as the "Hell Hound of Wall Street." Rogers, every inch a museum-quality "robber baron," was also a philanthropist and social activist, supporting Booker T. Washington and Hellen Keller, and helping Mark Twain escape from his notable financial perils. <https://www.american-rails.com/virginian.html> and https://en.wikipedia.org/wiki/Henry_Huttleston_Rogers

interchanged onto the NYC-affiliated Toledo & Ohio Central Railroad (T&OC) at Deepwater, WV, came over to the N&W.

The N&W acquired the Nickel Plate and Wabash in 1964. In 1965, the N&W and C&O proposed a merger including their lines plus the Reading, Central of New Jersey, Erie Lackawanna, Delaware & Hudson, and Boston & Maine, but this was rejected under pressure from the Pennsylvania and New York Central, and was eventually abandoned. In 1968, N&W acquired the D&H and Erie (which had previously been owned and then shed by the C&O). These 1964-68 mergers more than tripled the size of the N&W, resulting in a system operating 7,595 miles of railroad running from North Carolina to New York and from Virginia to Iowa.



N&W Yards at Williamson WV, 1930s.



The Sandusky Division

As noted above, after the N&W bought the Scioto Valley Railroad and built the Kenova Bridge into Ohio, it emerged as a premiere coal hauler into Columbus, but from there it could only interchange its traffic over to other railroads. The principal receiving railroad for this interchange volume was the Pennsylvania Railroad's Sandusky Branch. This 112-mile railroad, originally built in 1893 as the Columbus & Sandusky Short Line Railway, and then consolidated into the Columbus, Sandusky & Hocking Railroad, was acquired by the PRR in 1902.

The N&W's Columbus layout, with Pennor Yard feeding directly onto the PRR northward, was an ideal arrangement for direct handoff of coal arriving on the N&W that was bound for Lake Erie shipment. While the PRR Sandusky Branch hauled coal off the other Columbus railroads, the most frequent arrangements were 125-135 car cuts of N&W coal departing for the Sandusky Docks behind a PRR J1 2-10-4 road engine, with another J1 helper assisting up to Lewis Center.

In 1964, at the time the N&W merged in the Nickel Plate and Wabash Railroads, along with the Pittsburgh & West Virginia, the N&W purchased the PRR Sandusky Branch as a connector between Columbus and its newly-added Nickel Plate main line at Bellevue, and to move coal to Lake Erie.³⁰ N&W also acquired the huge Sandusky Coal Dock.

Coal Haulage on the N&W

In 1890 the N&W had 175 locomotives and owned 7,431 freight cars, of which 4,950, or 66.6 percent, were "flat, coal and coke cars."³¹ By 1914, the N&W freight car roster included 34,782 coal and coke hoppers and gondolas, or 71.7 percent of N&W's a total fleet of 48,494 freight cars.³² By 1950, the N&W owned 41,252 hoppers.³³ The N&W's concentration and dependence on coal traffic is apparent in comparison with the Pennsylvania Railroad, which in that same year owned 80,809 hoppers, double the N&W's fleet but serving nearly six times the amount of railroad.

N&W moved an average of 52 million tons of coal per year during World War II.³⁴ Just after the war, the N&W's volume of 180,000 tons received per day, as mentioned above, would indicate an overall volume approaching 60 million tons annually. While it is difficult to quantify exactly, given this level of haulage, the N&W appears to have been carrying roughly ten percent of all US bituminous coal moved by rail from the World War I era onward.³⁵

During much of this era, two-thirds of N&W's coal, some 30-40 million tons annually, moved west through Williamson and Kenova to N&W's enormous classification yard at Portsmouth, Ohio. This yard then had 102 miles of track, with a capacity over 10,000 cars. Apparently only a modest portion of this volume moved west from Portsmouth to Cincinnati, as the "Pea Vine" grades and curves were ill-suited to coal drags.³⁶ The N&W had much better connections in Columbus for interchange to Chicago and the Great Lakes markets. Columbus was likely receiving 25-30 million tons of this N&W coal annually during the War years and into the 1950s. After the mid-1950s, with coal prices surging for European exports, the balance of N&W coal began to shift back eastward, and the share moving into and through Columbus dropped.

³⁰ The PRR sale of the Sandusky Branch to the N&W was also related to the PRR's shareholdings in the N&W, and PRR's contemplation of its then-planned merger with the New York Central. PRR divestiture of N&W's shares and the Sandusky Branch were necessary conditions for PRR to obtain ICC approval for the PRR-NYC merger.

³¹ *Poor's Manual of Railroads*, 1890, p. 843.

³² *Official Railway Equipment Register*, Vol. 30, Issue 3, Oct. 1914, p. 153.

³³ *Official Railway Equipment Register*, 1950, <https://jbritton.pennsyr.com/index.php/tpm/latest-articles-blog/118-interchange-ownership-of-hoppers-by-class-i-railroads-in-1950>

³⁴ Mike Schafer, *Classic American Railroads - Volume III*, MBI Publishing Company LLC, 1996, p. 98-100. https://www.google.com/books/edition/Classic_American_Railroads/MCxgsaXmLcC?hl=en&gbpv=1&dq=percentage+N%26W+hoppers&pg=PA103&printsec=frontcover

³⁵ See, U.S. Bituminous Coal Production, 1900-71, <https://nma.org/wp-content/uploads/2016/08/Historic-Bituminous-Coal-Production.pdf> and summary of these figures in "Notes and References" below.

³⁶ N&W Portsmouth to Cincinnati, <https://www.jjakucyk.com/transit/nw.html>



Aerial photo, 1950s, looking west toward Joyce Avenue Yard, with Pennor Yard to the north (right) and the N&W roundhouse (enveloped in steam clouds) and Grogan Yard beyond. An out-of-service western fragment of the NYC East Columbus Branch is visible at the right.
<http://www.columbusrailroads.com/new/images/photos-steamroad/gr-n&w%20yards-1200.jpg>

N&W Coal Interchange in Columbus

With no northbound line from Columbus, and relatively few on-line industrial coal customers in the city, the N&W depended almost entirely on its ability to attract interchange traffic. Fortunately, the N&W had easily the best layout in Columbus for transferring coal to other railroads, especially in large ready-to-roll blocks of cars of unit train size.

The primary off taker for arriving N&W coal was the PRR, mainly the latter's Sandusky Branch for Lake traffic, and at times also its Bradford Line west toward Chicago. The N&W was perfectly set up to deliver full trains of loaded Appalachian coal hoppers to and receive returning empty drags from the PRR. The two railroads jointly operated Pennor Yard (eponymously named by combining the first syllables of the two railroads' names), a receiving and transfer yard parallel to Joyce Avenue Yard to the north. Arriving N&W coal train crews could pull directly into these long tracks, some able to accommodate 125 cars, cut off their locomotive and head for the big N&W roundhouse just beyond the west throat of Pennor Yard. The PRR would send pairs of N2sa class 2-10-2 Santa Fe, and in later years, pairs of PRR J-class 2-10-4 Texas-type engines, to pull these drags west through Grogan Yard, and north onto the Sandusky Branch uphill toward Worthington. Once past helper territory, a J1a road engine had plenty of power for the remainder of the route up through Marion, Bucyrus and Attica Junction to Bayside Yard, and into the monstrous three-pier Sandusky Coal Terminal beyond. At times, especially during the War years when the crossing over the PRR CA&C line between Joyce Avenue and Grogan Yard was congested, the PRR would use its transfer crews, usually with an I1 decapod, to pick up these coal drags at Pennor and move them over to Grogan to await departure toward Sandusky.³⁷

³⁷ The most detailed snapshot of N&W transfer of coal to the PRR for haulage to Sandusky and Chicago is set forth in Rick Tipton's *The Pennsylvania Railroad in Columbus, Ohio*, The Pennsylvania Railroad Technical & Historical Society 2011, p. 139-40 and 166-7.

<i>Railroad</i>	<i>N&W Interchange Points</i>
<i>PRR</i>	Pennor Yard and Joyce Ave. Yard South 4 Tracks
<i>C&O</i>	Watkins Yard
<i>B&O</i>	Taylor Avenue
<i>NYC T&OC</i>	Watkins Yard, Bannon
<i>NYC Big Four</i>	2nd Avenue

Source: <http://www.columbusrailroads.com/new/pdf/map-1934-steamroad.pdf>

The PRR also leased four tracks on the south edge of Joyce Avenue Yard for transfer of coal off the N&W. These tracks were more frequently used for arriving N&W Appalachian coal destined for Chicago via the Bradford Line through Piqua to Logansport, Indiana. PRR JIs could pick their trains up directly from these N&W tracks, but PRR often used its transfer power, including the I1 decapods as well as its fleet of big CC2 0-8-8-0s and HH 2-8-8-2s (former N&W "Y3" class compound engines) to pull trains of loaded hoppers over to Hilliard Relay Yard to await a PRR road engine and crew for Logansport.³⁸

The C&O, with its high-capacity Toledo line, Presque Isle Marine Coal Terminal at Toledo, and direct connection to Detroit and C&O's extensive Michigan lines, also received a significant portion of the N&W coal arriving in Columbus. The C&O had a near ideal interchange point with the N&W at Valley Crossing just east of Parsons Yard, and at Watkins Yard.

The C&O had used the N&W's Scioto Valley line between 1910 and 1927 to carry all C&O trains from West Virginia and Kentucky to Columbus. When the C&O purchased the Hocking Valley Railroad in 1910, it had no direct connection point between the HVR and the C&O's southern lines. The C&O first tried to buy the T&OC predecessor Kanawha & Michigan to establish a connection, but the ICC rejected this transaction. C&O's next best option was to obtain trackage rights over the N&W from Kenova to Valley Crossing. This was never an ideal relationship, but in 1914 the N&W lengthened its passing tracks on the Scioto line to accommodate C&O coal drags. The C&O started building its own Northern Line from Russell, Kentucky to Columbus during World War I, and opened its huge Sciotoville bridge and laid track as far as Waverly by 1917. However, the C&O did not complete its line all the way to Valley Crossing until 1927, continuing to use the N&W track for all its traffic. HVR annual reports show C&O moving some 5.5 million tons of coal annually over this N&W arrangement as early as 1916, and the volume reached 17 million tons of coal annually by the time C&O's air line track was completed in 1927.

The N&W had convenient transfer access to the T&OC from Watkins Yard and Bannon directly into the T&OC South Columbus Yard, used mainly for coal interchange, without going through congested downtown Columbus bottlenecks at High Street or Joyce Avenue. From South Columbus the T&OC could haul cuts of N&W hoppers to Toledo and the NYC's Lakefront Docks, or on to the big Ford River Rouge plant or other Michigan industrial or utility customers. The T&OC was a serious coal hauler with two single-track lines, either directly up the T&OC Western

³⁸ Rick Tipton, *supra*, *The Pennsylvania Railroad in Columbus, Ohio*, p. 166-7 and 178-9.

Branch from South Columbus to Toledo through Marysville. Kenton and Findlay, or via Thurston and up the Eastern Branch through Johnstown, Bucyrus and Fostoria.

A significant flow of T&OC coal had always arisen from its end-to-end connection with the Virginian Railway at Deepwater, WV. The Virginian was a huge Appalachian coal hauler, both east and westward, and fed many a Toledo-bound cut of coal directly onto the T&OC. The Virginian was so integrated operationally with the T&OC that many of the latter's symbol trains had an "N" for Norfolk, which was the eastern terminus of the Virginian. The T&OC's main northbound worker trains bore "NT" names for "Norfolk-Toledo" and southbounds used "CN" for Chicago-Norfolk or "TN" for Toledo-Norfolk. When the N&W acquired the Virginian in 1959 much of the historical Virginian coal disappeared from the T&OC, moving directly onto the N&W in Southern West Virginia, especially after the N&W took over the Sandusky Branch of the PRR in 1964. But T&OC still occasionally received Virginian loads at Bannon or Deepwater, and continued use of the "N" letter in its train symbol names until the Conrail era.

The N&W did transfer some coal to the NYC Big Four in Columbus, including drags bound for the Cleveland and Ashtabula coal docks on Lake Erie. But the N&W-Big Four interchange points for loads and returning empties were awkward at best, the main identified transfer location being at 2nd Avenue just north of the Big Four's East Yard above Union Depot. In the late 1960s, after the NYC-PRR merger creating the Penn Central, the PC ran returning N&W Ashtabula empties through Union Depot, northwest up the Bradford Line, south through Buckeye Yard and onto the Miami Line eastward, onto the T&OC via the Auburn Track at LM Crossing, and then to Bannon to interchange back to the N&W, a 16-mile circuit painful to recount even a half-century later.

N&W, with only a single line terminating in Columbus in the big coal era, nevertheless had need for some 7,045 cars of capacity at four yards in Columbus (Joyce Avenue, Infirmary, Watkins and Valley Crossing). In contrast, the C&O, with three lines and through service for coal moving to the Great Lakes, had 6,710 cars of capacity at its four yards in Columbus; the PRR with lines converging from five directions, had capacity for 9,258 cars at 12 yards, while the Big Four only had 1,623 cars' capacity at its six yards and the T&OC maintained 1,653 cars of capacity at West and South Columbus Yards. The B&O, with a through line but with its major rail hub at Newark, only had one Columbus yard with 378 cars' capacity. Peak coal era aerial photos show N&W's yard capacity was heavily committed to long cuts of loaded and empty coal hoppers.

Coal Hauling Power on the N&W

Camera-shy N&W predecessor Scioto Valley Railway, which operated from 1877-1890 between Columbus and Coal Grove, appears to have run both 4-4-0 American and 2-6-0 Mogul-type locomotives.

N&W's early freight locomotives from the time it acquired the Scioto Valley Railway included multiple classes of 2-8-0 Consolidations, some with superheaters and tractive effort up to 40,000 lb./ft., considered to be excellent locomotives for their eras. Some hundreds of these engines were delivered from the 1880s up to 1904, mostly by Burnham, Parry, Williams & Co., but also by Baldwin, Alco and other builders. The N&W also used M-class 4-8-0 engines built in 1906-10 for

many freight assignments, including coal drags north from Portsmouth to Columbus.³⁹ N&W later used K1 4-8-2 Mountain-type locomotives, built in its own shops in 1916, for freight assignments on the Columbus District up through the 1950s.

Beginning in 1912-14 with orders from Baldwin and Alco, followed by some additional N&W Roanoke shop models as late as 1942, N&W ordered 206 big 2-6-6-2 Z-class compound Mallets. These engines were good designs for steep, curving track and heavier loads. They had working pressures up to 225 psi, with Baker valve gear and significant superheater to total evaporative surface ratios, offering impressive tractive efforts up to 104,000 lb./ft.

But with N&W's burgeoning coal traffic, moving to the Norfolk docks as well up through mountainous country into the Midwest, the N&W eventually turned to much bigger articulated power, including its "A" and "Y" classes. These enormous engines, along with the N&W's streamlined J-class 4-8-4 passenger locomotives, would become the line's signature models.

A-Class 2-6-6-4s

Beginning in 1936 and continuing through 1950, to tackle its heaviest haulage assignments, N&W built 43 2-6-6-4 "A" class locomotives, Road Nos. 1200-1242. These 425-ton engines, with 70-inch drivers, four 24-inch diameter high-pressure cylinders and Baker valve gear, featured working pressures of 300 psi, with 9,342 ft² of evaporative surface, of which 2,703 ft² was superheated, giving them 125,897 lb./ft. of tractive effort. Unlike most articulateds, this design enabled use of interchangeable parts between the front and rear sets of cylinders and drivers. A few "As" later got a traction-boosting retrofit, with an increase to 315 psi boiler pressure, cylinders bored out to 24.5 inches and drivers slimmed down to 69.5 inches. Their 122 ft² fireboxes could sustain output at up to 6,325 horsepower.

The high-productivity "As," often seen working N&W coal northward from Portsmouth to Columbus, could crank a 100-hopper drag over 60 miles per hour. They occasionally hauled passenger trains at 70 mph in the era just before N&W's iconic "J" 4-8-4s appeared. The later model "A" engines were rated for 14,500-ton coal trains over the Kenova District from Williamson to Portsmouth. The "As," which unlike most other elite classes of steam locomotives had no nickname, required only 120-lb. rail in spite of their considerable heft.

They were also notorious water-guzzlers, consuming some 58 tons per hour under full throttle. This was more than 60 percent of the design capacity of the "A's" tender, and required taking on water every two hours or less. The N&W addressed this problem in 1951 by coupling an additional 20,800-gallon "canteen" tank behind the primary tender, raising total locomotive and tender weight to 616 tons (and requiring separate handling on roundhouse turntables), but increasing gross tons per mile per train hour (GTM) by 31 percent on the Kenova District.⁴⁰

³⁹ <https://www.steamlocomotive.com/locobase.php?country=USA&wheel=4-8-0&railroad=nw> The Ms' light axle loading enabled them to run on rail as small as 71-lbs. Some were reassigned to local switching duties up through the end of the steam era. Nos. 422, 444 and 451 were used for this work in Columbus in the 1950s.

⁴⁰ *Norfolk & Western - Class A 2-6-6-4*, http://www.fineartmodels.com/Class_A.html



"A" No. 1237 at Joyce Avenue, June, 1955, photo by Don Etter from the Jay Williams Collection, courtesy of Columbus Railroads.

http://www.columbusrailroads.com/new/?menu=05Steam_Railroads&submenu=44Steam_1945-1960&submenu4=x7N%26W_Locomotives

Y-Class 2-8-8-2

From 1910 through 1952, N&W laid on 216 colossal 2-8-8-2 compound Class Y locomotives. Arriving in seven classes, initially from Baldwin and Alco, and from 1930 on from its own Roanoke Shops, the "Ys" had 56–58-inch drivers, 25-inch high-pressure cylinders, 39-inch low pressure cylinders, Baker valve gear, 275-300 psi boiler pressures, tractive efforts up to 126,831 lb./ft. working compound, and 166,000 lb./ft. working in simple mode. N&W "Ys" featured a "reducing" or "booster" valve, which could admit some superheated steam into the receiver between the high and low pressure cylinders, allowing a 20 psi pressure boost to the steam feeding the low pressure cylinders in compound mode.

With smaller fire grate areas than their sister "A" class engines, the "Ys" were designed to optimize the combination of tractive effort and fuel efficiency rather than maximizing horsepower and speed. The later stage Y6s could pull 13,500 tons on level ground at 25 miles per hour, generating 5,500 horsepower with the high-pressure cut off at 60 percent and low-pressure cut off at 55 percent. The "Ys" were nimble enough to boast a top speed of 50 miles per hour. Some experts rated the Y6 as the "most successful articulated locomotive ever built."⁴¹

⁴¹ See Greg Mills comments in *SteamLocomotive.com*, <https://www.steamlocomotive.com/locobase.php?country=USA&wheel=2-8-8-2&railroad=nw>



"Y" No. 2038 at Joyce Avenue, c. 1954, photo by Don Etter from the Jay Williams Collection, courtesy of Columbus Railroads. <http://www.columbusrailroads.com/new/images/photos-locomotives/jw%20n&w%202038-1200.jpg>

The bulk of the Y3-Y6 class carried Road Nos. 2000-2200. The biggest of these massive engines, with fully-loaded tender, weighed 495 tons. But this was some 50 tons less than the C&O's Alleghenys or Union Pacific's Big Boys, and the "Ys" all could operate on 115-lb. rail, meaning they could go almost anywhere on the N&W's Appalachian and Ohio divisions.

N&W Loyalty to Steam Power

It is well known history that the N&W, which came as close as possible to perfecting steam locomotion, was the last big U.S. railroad to retire its main line steam power in favor of diesels, in 1960. The N&W's well-ordered engine houses, known as "Lubritoriums," looked more like sanitary medical facilities than typical railroad roundhouses and shops. While most railroads' engine house management would despair of the clutter and debris, complaining they could not afford to keep them better picked-up, the N&W told visitors they could not afford not to do so.

When EMD first offered diesels in 1952, N&W gave its crack steam power the chance to prove its worth. Turning to freshly-overhauled "A" No. 1239, N&W demonstrated an astounding GTM of 518,700, averaging 32 miles per hour pulling 175 cars loaded with 16,042 tons of coal westbound over the Kenova District. This more than matched the purring new EMD consists for power, speed and economic performance. But it was not to be for long. Diesel fuel cost ten cents a gallon. By 1958-9 the articulateds were sidelined, and the Js were knocked off the *Pocahontas*, scheduled only for time freight commodity assignments. By 1960, the last mainline N&W steam was gone.

N&W in Central Ohio Today

In 1980, the N&W merged with the Southern Railway forming the Norfolk Southern Corporation as a holding company, although the N&W and Southern continued as separate railroads. The two merged in 1986, resulting in today's Norfolk Southern Railway. The NS took over some 58 percent

of Conrail in its 1997 privatization sale, including the T&OC line south of Columbus, with CSX absorbing most of the rest of Conrail in Ohio.

The 98-mile Columbus District track from Portsmouth to Columbus continues operation with typical N&W efficiency. The line is double-track except for two short stretches at Omega and Chillicothe. The former at-grade crossings with the B&O at Chillicothe and with the PRR C&MV at Circleville are gone following abandonment of those other lines. The huge Joyce Avenue, Pennor and Grogan Yards are gone. Norfolk Southern trains now breeze westward through the remaining rights-of-way there, turning north onto the former PRR Sandusky Branch.

The NS 2021 Annual Report indicates the system handled 73 million tons of coal in 700,000 carloads during the most recent reporting year. But its \$1.3 billion in coal freight was only 12 percent of the railroad's revenue, down from well over 60 percent during most of the great coal era. NS does not furnish division by division revenues, so it is not possible to quantify Columbus coal movements. But NS indicates it still originates much of its volume from the same eastern coal basins it has served historically, plus western coal received at its Memphis and Chicago gateways. NS carries Appalachian coal to Lake Erie for water transport, and now owns and operates the 875,000-ton capacity Sandusky Dock⁴² at the north end of the former PRR Sandusky Branch, along with coal docks in Ashtabula with seven million tons storage capacity, and the always-busy Lambert's Point coal docks in Norfolk.



NS coal, empty hoppers and limestone loads at Bluefield, WV, 2009.

<https://www.coalcampusa.com/sowv/flattop/mercer/mercer.htm>

Norfolk Southern currently ranks 307th on the Fortune 500 list of the largest U.S. corporations, with a market cap (*i.e.*, value of all outstanding shares) of \$67.4 billion.

Acknowledgments: Supreme credit goes to Alex Campbell and Columbus Railroads, for editing suggestions, concepts and overall encouragement.

⁴² <http://www.nscorp.com/content/nscorp/en/shipping-options/coal/transload-facilities/sandusky-dock-sandusky-oh.html>

Notes and References:

Corrections, Clarifications and Additions Welcome. These articles flow from a combination of research into ancient railroad corporate records and news sources, industry articles, inferences from maps and satellite images, railroaders' and others' personal recollections and anecdotes. The latter are often of the hearsay variety, which may occasionally be inconsistent, incomplete or incorrect (or perhaps exaggeration or fantasy). The author is increasingly prone to silly mistakes as his age advances and could really use a good proofreader. Comments are most welcome.

This article has not been researched to any extent even close to basic academic-level rigor. Notes and references provided are mainly to allow the reader to connect with interesting related material for exploration and follow-up reading.

N&W Immortalized through the Lens - O. Winston Link



O. Winston Link, and his featured 1956 shot of an N&W "A"-Class 2-6-6-4 roaring past the drive-in theater at Leager, West Virginia, with a jet aircraft on the screen and romantic young couple in a convertible.

No N&W general history article can omit a reference to photographer O. Winston Link (1914-2001), who memorialized the N&W with some 2,400 images taken during the last years of steam power in 1955-60. There is no apparent connection to N&W coal moving through Central Ohio, so we will include only this brief coda about Link. However, readers who make time to follow up on Link's story and view and listen to his spectacular works will be richly rewarded.

Born in Brooklyn, Link worked as a commercial photographer in New York City. But his passion was photographing the N&W's Appalachian operations and the surrounding people and places, clerks, roundhouse, car shop and track workers, residents of villages on the N&W lines.

He was not engaged by the N&W, and financed his elaborate expeditions from his own pocket. Link used big cameras and other apparatus that was state of the art for the flashbulb era, and lots of it, setting up arrays of lighting and wired flash points to get his desired effect at exactly the right

instant. Link's most exotic images were nighttime shots. He perfected techniques for capturing the essence of huge black locomotives steaming through the dark.

Link's photos were elaborately orchestrated months in advance, conspicuously staged, highly contrived and posed, often borderline corny, but invariably evocative and unforgettably dramatic. Each image has multiple focal points and motion, showing the viewer the reality that is at that moment, with something permanent and lasting, something leaving and something new arriving. He also produced motion picture film shot atop speeding passenger trains, and moving sound recordings of N&W's passenger trains approaching and blasting through small towns at night. His favorite venues were places such as Rural Retreat, Virginia on the Radford Division, and Vesuvius on the Shenandoah Division. A classic is Link's brilliantly staged recording of a church organist playing carols on the steeple chimes on Christmas Eve, 1957, during which the N&W *Pelican*, behind J-class No. 603, approaches and storms through Rural Retreat, her deep-throated whistle howling for the street crossings.⁴³

Link's emotional connection with steam railroading was boundless, and sometimes a bit irrational. In 1977, when N&W finally determined to abandon its curving and steep Abingdon Branch to West Jefferson, NC, (3.0 percent controlling grade with the highest railroad summit East of the Mississippi) Link tried to buy it, but could not quite organize the financing. He also purchased a 4-6-0 Canadian Pacific locomotive for restoration.

Link perfectly captured the sweet long fadeout of steam railroading in Appalachia, and the stories and souls of the people that worked and lived it through those last days.

Link Resources:

O. Winston Link Museum, Roanoke, Virginia: <https://roanokehistory.org/historical-society-of-western-virginia/owl-main-page/>

Abingdon Branch and Virginia Creeper Trail:

<https://www.csxthsociety.org/railfanning/nwvirginiacreepertrailabingdonbranch.html>

Comprehensive authoritative information on N&W history, operations and locomotives:

Adam Burns, *Railroads in America*, <https://www.american-rails.com/norfolk.html>

Walter R Marvin, B.A., *Columbus and the Railroads of Central Ohio before the Civil War*, A Dissertation, The Ohio State University, 1953

https://etd.ohiolink.edu/apexprod/rws_etd/send_file/send?accession=osu1486471132852905&disposition=inline

T. B. Maertens, Jr., *The Relationships of Climate and Rain to Maintenance of Way on the Norfolk Southern Railroad between Norfolk, Virginia and Portsmouth Ohio*, A Dissertation, University of Tennessee, August 1990 by <https://apps.dtic.mil/sti/pdfs/ADA223587.pdf>

⁴³ O. Winston Link, *Trains That Passed in the Night*, <https://www.youtube.com/watch?v=Gfld5bbfC2Y>

Don Winter - Description, Scioto Valley Line, Vera to CW Tower (Portsmouth to Joyce Ave.)

<http://www.donwinter.com/Railroad%20Infrastructure%20and%20Traffic%20Data/Regions/Appalachian%20Coal%20Routes/Route%20Descriptions/Vera%20to%20CW%20Tower.htm>

Don Winter - Description, Vera to Kenova:

<http://www.donwinter.com/Railroad%20Infrastructure%20and%20Traffic%20Data/Regions/Appalachian%20Coal%20Routes/Route%20Descriptions/Vera%20to%20Kenova.htm>

Pocahontas Coal Seam Details:

<https://www.wvencyclopedia.org/articles/1880>

N&W Detailed System Map, 1965, with Regions Color Coded:

<http://www.multimodalways.org/docs/railroads/companies/N&W/N&W%20Maps/N&W%20System%20Map%201965.pdf>

Official Railway Equipment Register, 1950 Table of Hopper Ownership by Railroad:

<https://jbritton.pennsyr.com/index.php/tpm/latest-articles-blog/118-interchange-ownership-of-hoppers-by-class-i-railroads-in-1950>

Ironton, Ohio - History of Iron Industries: <https://lawrencecountyohio.com/iron-ton-2/>

Ninety-Ton High Side Gondola Car, Railway Age Gazette, Vol. 54, No. 25, June 20, 1913, pp. 14-191913. <https://nwhistory.info/articles/N&Wgondola.php>

<i>U.S. Bituminous Coal Production 1900-1971</i>							
<i>Year</i>	<i>Tons (M)</i>	<i>Year</i>	<i>Tons (M)</i>	<i>Year</i>	<i>Tons (M)</i>	<i>Year</i>	<i>Tons (M)</i>
1900	212.3	1918	579.4	1936	439.1	1954	391.7
1901	225.8	1919	465.8	1937	445.5	1955	464.6
1902	260.2	1920	568.7	1938	348.5	1956	500.9
1903	282.7	1921	415.9	1939	394.9	1957	492.7
1904	278.6	1922	422.3	1940	460.8	1958	410.4
1905	315.0	1923	564.6	1941	514.1	1959	412.2
1906	342.8	1924	483.7	1942	582.7	1960	415.5
1907	394.8	1925	520.0	1943	590.2	1961	403.0
1908	332.6	1926	573.4	1944	619.6	1962	422.1
1909	379.7	1927	517.8	1945	577.6	1963	458.9
1910	417.1	1928	500.7	1946	533.9	1964	487.0
1911	405.9	1929	535.0	1947	630.6	1965	512.1
1912	450.1	1930	467.5	1948	599.5	1966	533.9
1913	478.4	1931	382.1	1949	437.9	1967	552.6
1914	422.7	1932	309.7	1950	516.3	1968	545.2
1915	442.6	1933	333.6	1951	533.7	1969	560.5
1916	502.5	1934	359.4	1952	466.8	1970	602.9
1917	551.8	1935	372.4	1953	457.3	1971	552.2

Source: <https://nma.org/wp-content/uploads/2016/08/Historic-Bituminous-Coal-Production.pdf>