

The Pennsylvania Canals

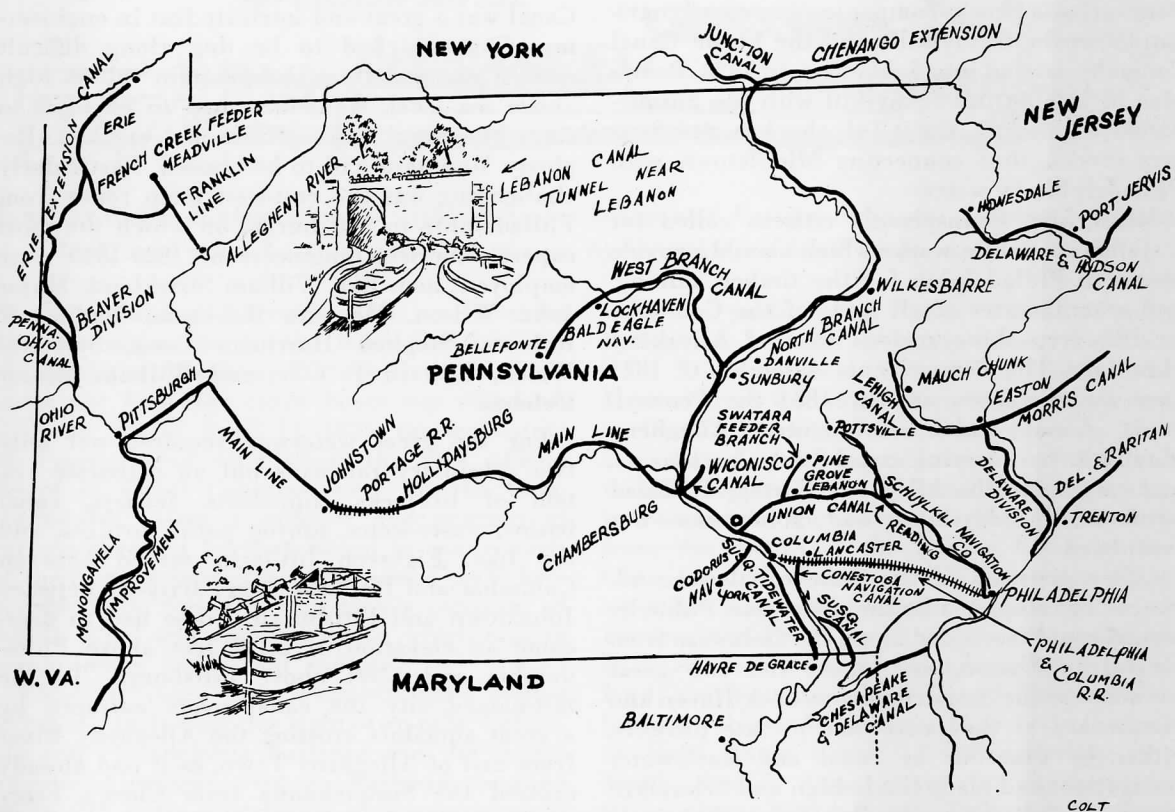
DOWN the eastern seaboard of the United States the Appalachians present a barrier to commercial transportation. Through this mountain wall the state of New York has a convenient passage in the Mohawk Valley. Pennsylvania, however, has no such gateway to the western part of the State, and beyond. Even the Juniata Valley, which penetrates far into the interior, is brought up short by the huge, unbroken mass of Allegheny Mountain.

In colonial days, to overcome the Appalachian barrier, traders drove trains of pack horses (each carrying a load of some 200 pounds) up and down the mountain ridges; but the cost of transporting goods over such heights, even after

the Indian trails which the pack trains followed had been widened to accommodate wagons, was prohibitive of commerce on any extended scale.

Nature herself, however, had provided a partial solution to the problem she had thus created. Great rivers, the Delaware, Susquehanna, and Allegheny, pierced the mountains, range after range (except for the Allegheny Mountain), by way of gorges known locally as "water gaps"; and in the valleys between these ranges flowed countless navigable tributaries.

From the earliest days of the Province of Pennsylvania, plans were studied for encouraging trade by means of waterways. William Penn, the Founder, as early as 1690 dreamed of con-



The canals of Pennsylvania. Not all these canals were in existence at the same time. Insets show the famous tunnel of the Union Canal near Lebanon and a canal bridge.

necting Delaware River traffic with the Susquehanna River. His thought was to build a canal to follow the upstream course of Tulpehocken Creek from its mouth on the Schuylkill River and the downstream course of the Swatara to its mouth on the Susquehanna. Such a canal would bind the Delaware, Schuylkill, and Susquehanna rivers into one great system of transportation.

A century was to pass, however, before Pennsylvania had its first artificial waterway. In 1797 the Conewago Canal, built on the west bank of the Susquehanna below York Haven to enable boats to avoid the rocks and rapids of the Conewago Falls, was declared operable by the State. Its purpose was to link river traffic safely with Columbia and with the turnpike which ran from that town to Philadelphia.

The great spur to Pennsylvania canal building came from the example of the Erie Canal three decades later. As that New York state project went forward between 1817 and 1825, Pennsylvania stock companies improved navigation on the Schuylkill; and the Union Canal Company carried into final effect, in 1828, Penn's idea of joining the Schuylkill with the Susquehanna by a canal along Tulpehocken and Swatara creeks, thus connecting Middletown with Philadelphia by water.

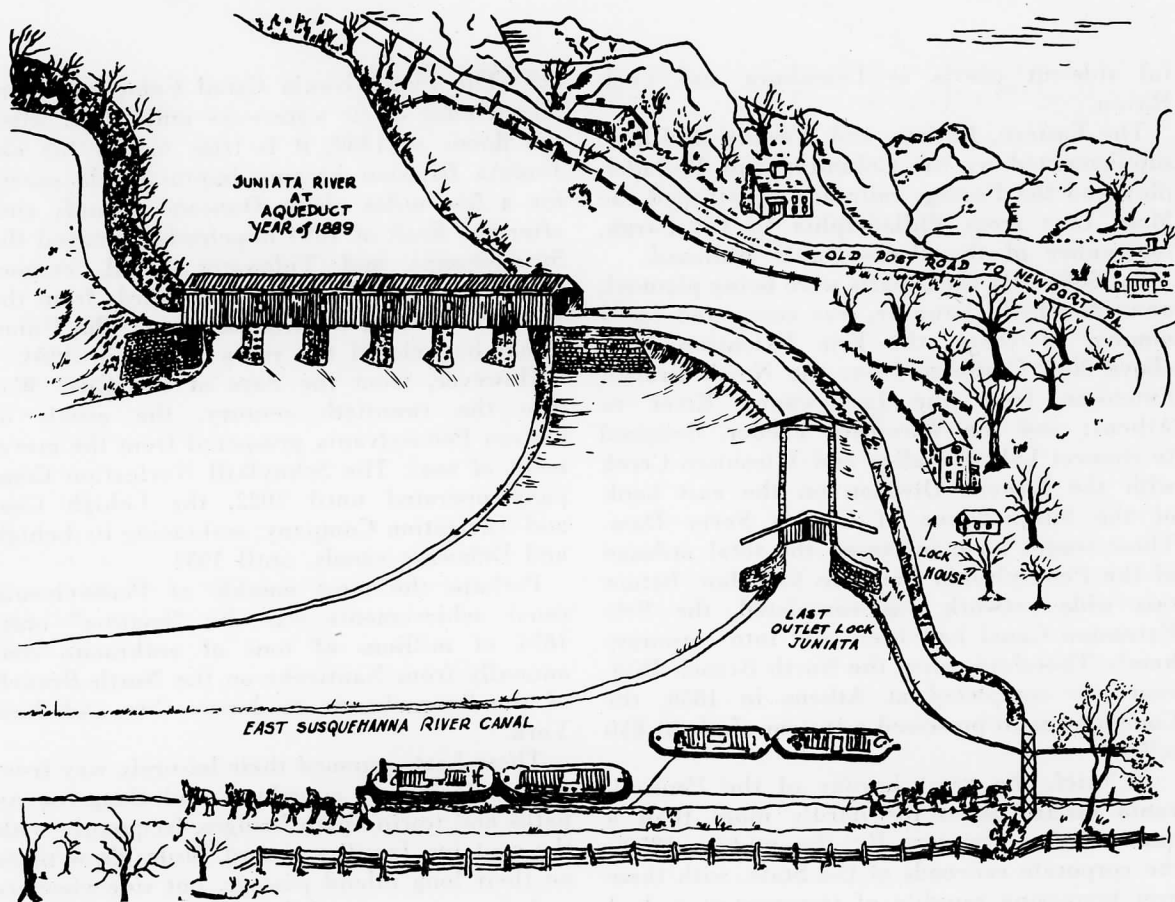
Meanwhile, Pennsylvania citizens called for a system of public works which should provide access to Philadelphia for the timber, mining, and manufactures of all parts of the Commonwealth, even those regions west of Allegheny Mountain. The Pennsylvania Assembly of 1824 gave authorization, and by 1834 the Pennsylvania Canal—which surmounted Allegheny Mountain by carrying canal boats, passengers, and cargoes on the Allegheny Portage Railroad between Hollidaysburg and Johnstown—was completed.

Other divisions of the State canal were advanced or completed by the same year. Publicly-owned canals ascended along the Delaware from Bristol to Easton, and along the two great branches of the Susquehanna to Lock Haven and Nanticoke; at the same time private projects, either by canal or by canal and slack-water navigation, had made the Lehigh and Schuylkill rivers efficient for trade. By 1845 both private and public waterway connections had been established to link the cities of Pittsburgh, Mead-

ville, and Erie by the Ohio River, the Beaver Division Canal, the Erie Extension, and the Franklin Line. The Youghiogheny Navigation and Monongahela Navigation companies, both private enterprises, were completed in 1850 and 1856 to bear traffic between southwestern Pennsylvania and Pittsburgh. The Delaware and Hudson Canal, promoted by a stock company, linked, before 1830, the coal mines of the Lackawanna Valley and northeastern Pennsylvania with the Hudson River and New York City, and by 1846 was accommodating cargoes of fifty-four tons. Other waterway terminals within the Commonwealth connected with New Jersey canals on the east and Ohio canals on the west, furthering interstate commerce during the same period. A towpath bridge on the Susquehanna encouraged trade with Chesapeake Bay and Maryland by linking the Pennsylvania Canal at Columbia with the Susquehanna and Tidewater Canal at Wrightsville.

The building of the State-owned Pennsylvania Canal was a great and intricate feat in engineering. Channels had to be dug along difficult river banks and through mountain valleys high above sea level. Aqueducts had to be built to carry the canal across rivers and creeks. Allegheny Mountain had to be crossed. Particularly challenging was the east-west main route from Philadelphia to Pittsburgh, on which the most expert American engineers of 1825-1840 were employed, men like William Strickland, Major John Wilson, Moncure Robinson, Nathan S. Roberts, Stephen Harriman Long, Sylvester Welch, Edward F. Gay, and William Milnor Roberts.

For the great waterway required not only two subsidiary railroads but an elaborate system of lift-locks, aqueducts, feeders, canal basins, waste-weirs, towing paths, bridges, and the like. Eighteen lift-locks served between Columbia and Hollidaysburg; sixty-six between Johnstown and Pittsburgh. These had to overcome an elevation of 2,102 feet above Philadelphia and 1,691 above Pittsburgh. To the last-named city the canal made entrance by a great aqueduct crossing the Allegheny River from east of Allegheny Town, as it had already crossed the Susquehanna from Clark's Ferry to Duncan's Island by a mile-long towing-path bridge. Travel and transport were slow on canal boats drawn by mules or horses, with



Junction of the Juniata Division with the Susquehanna and Eastern divisions, showing aqueduct, lock, and canal boats. A memory picture by an unknown hand, redrawn by the artist.

frequent passings through locks or transfer over the mountains by the levels and inclined planes of the Allegheny Portage Railroad. Four miles per hour for cargo boats was standard.

By an Act of April 11, 1825, the legislature of Pennsylvania established the first official Board of Canal Commissioners for the Commonwealth. After a summer and autumn of surveys directed by that Board in many parts of the State, a second Act was passed on February 25, 1826, formally initiating a program of public canal and railroad works which was to revolutionize traffic and industry.

Fourteen years later Pennsylvania's system of canals, including the eighty-two-mile Columbia and Philadelphia Railroad and the thirty-six-mile Allegheny Portage Railroad, totalled up to 726 miles of railways and waterways in operation, while another 208 miles were in process of construction. By that time the chief

waterway parts of the Public Works, officially designated "divisions," were these: the Delaware Division from Bristol to Easton; the Eastern from Columbia along the Susquehanna to Clark's Ferry and across the river to Duncan's Island; the Juniata from Duncan's Island to Hollidaysburg; the Western from Johnstown to Pittsburgh; the Beaver Division northwards from the mouth of the Beaver River on the Ohio to slack water on the Shenango River six miles above New Castle; the French Creek Feeder; the Franklin Line; the Susquehanna Division from Duncan's Island to Northumberland; the West Branch Division from Northumberland above Williamsport and the mouth of Bald Eagle Creek to Farrandsville; the North Branch Division to the Lackawanna River above Wilkes-Barre. Tributary to these were a number of important feeder dams, and, on the West Branch Division, two highly use-

ful side-cut canals at Lewisburg and Lock Haven.

The Eastern, Juniata, and Western divisions, supplemented by the Columbia and Philadelphia and the Portage railroads, constituted the Main Line from Philadelphia to Pittsburgh, forerunner of the Pennsylvania Railroad.

In 1839 other canal parts were being planned, none of which, however, was completed for a number of years: the Erie Extension from above New Castle to Erie; the North Branch Extension from the Lackawanna River to Athens; and the Wiconisco Feeder, designed to connect Lykens Valley and Wiconisco Creek with the Eastern Division on the east bank of the Susquehanna at Clark's Ferry Dam. These would have increased the total mileage of the Pennsylvania Canal to 934; but, before this wide network was completed, the Erie Extension Canal had been sold into corporate hands. Therefore, when the North Branch Division was completed at Athens in 1856, the Commonwealth possessed a system of about 830 miles.

In brief, the great heyday of the Pennsylvania canals lasted for hardly more than a quarter of a century. By the middle 1850's the corporate railroads of the State, with their ever increasing rapidity of transportation, had become vigorous and aggressive competitors, and the Commonwealth found it financially advisable to dispose of its canals to private railroad and canal companies. As early as 1843 it sold the Erie Extension Canal, the French Creek Feeder, and the Franklin Line. In 1857 the Pennsylvania Railroad Company purchased the Main Line from Philadelphia to Pittsburgh. Within a few years the now useless Western Division was abandoned, and in 1867 the Juniata and Eastern divisions were transferred to the Pennsylvania Canal Company, which also acquired and operated the West Branch Division, the North Branch Division below Wilkes-Barre, and the Susquehanna Division.

Canal operation ceased earliest in western Pennsylvania. East of the Alleghenies the canals in private possession were rather more prosper-

ous. The Pennsylvania Canal Company maintained most of its waterways until 1901. After the floods of 1889, it is true, use of the old Juniata Division became impracticable except for a few miles above Duncan's Island; and, after the flood of 1894 hopelessly damaged the Susquehanna and Tidewater Canal, cargoes could no longer be "boated" onwards from the Eastern Division to Atlantic ports. The Union Canal had closed ten years earlier in 1884.

However, from the days of the Civil War into the twentieth century, the canals of eastern Pennsylvania prospered from the movement of coal. The Schuylkill Navigation Company operated until 1922, the Lehigh Coal and Navigation Company, embracing its Lehigh and Delaware canals, until 1931.

Perhaps the most notable of Pennsylvania canal achievements was the "boating" until 1894 of millions of tons of anthracite coal annually from Nanticoke on the North Branch of the Susquehanna to Jersey City and New York.

These boats pursued their leisurely way from lock to lock, over aqueducts, and along towing paths and towing path bridges, frequently with the captains' families aboard. Mules drew them on their long inland passage, but side-wheelers and steam tugs towed them on the rivers. They passed by Northumberland, Clark's Ferry, Middletown, Wrightsville, and Havre de Grace to the Chesapeake and Delaware Canal. Then they went up the Delaware River to Philadelphia, or further by way of the Delaware and Raritan Canal in New Jersey past New Brunswick and Perth Amboy to the Hudson River and wharves of New York City.

The days of canal transportation in Pennsylvania are over. Historical markers still point out the traces of former canal beds, ruined locks, and other reminders of the canal age; and along the Delaware River the Commonwealth has preserved and restored a portion of the old Delaware Division of the Pennsylvania Canal, a memorial to the canal system which pierced the Appalachian barrier and contributed greatly to the State's material wealth and industrial progress.

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