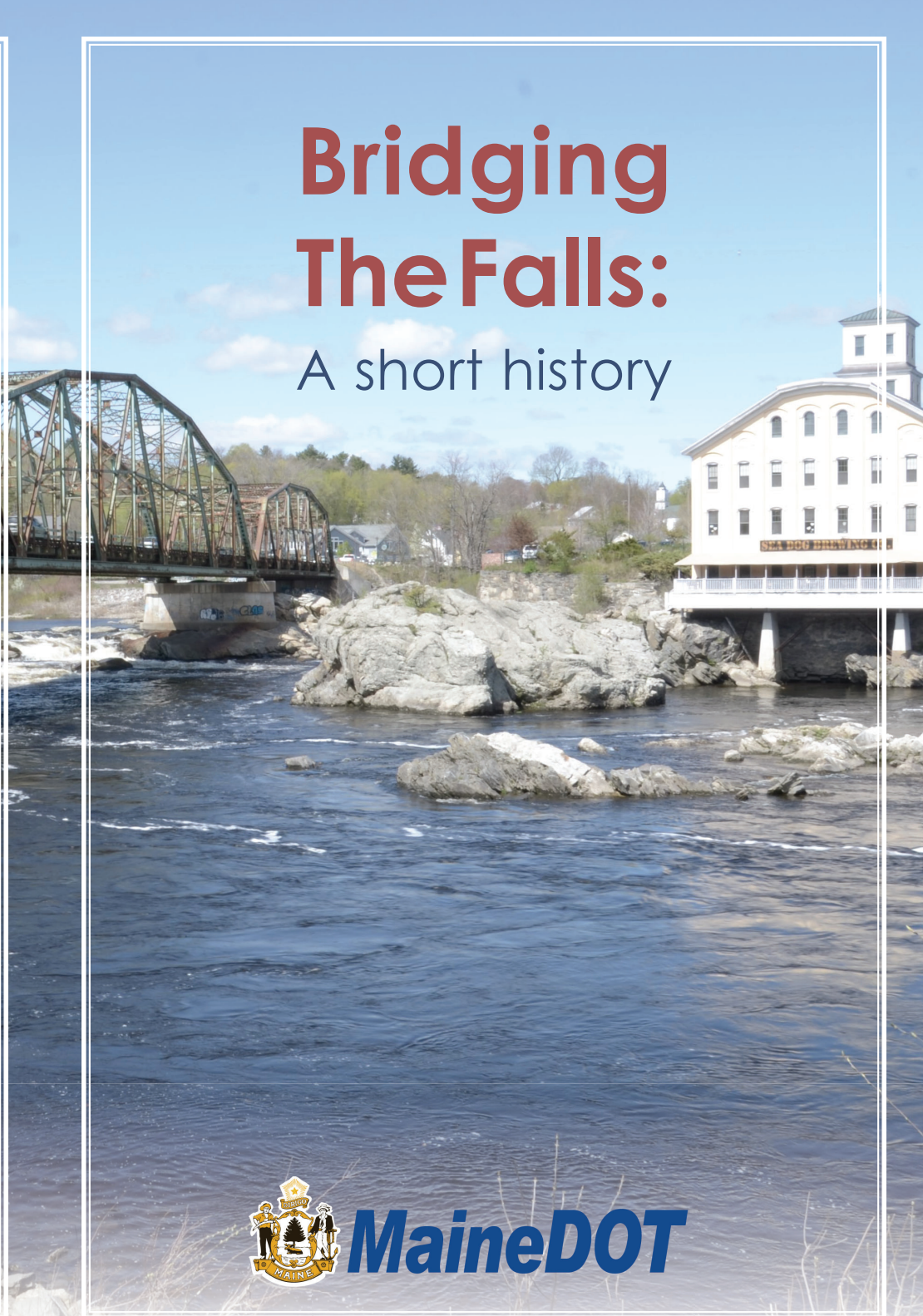
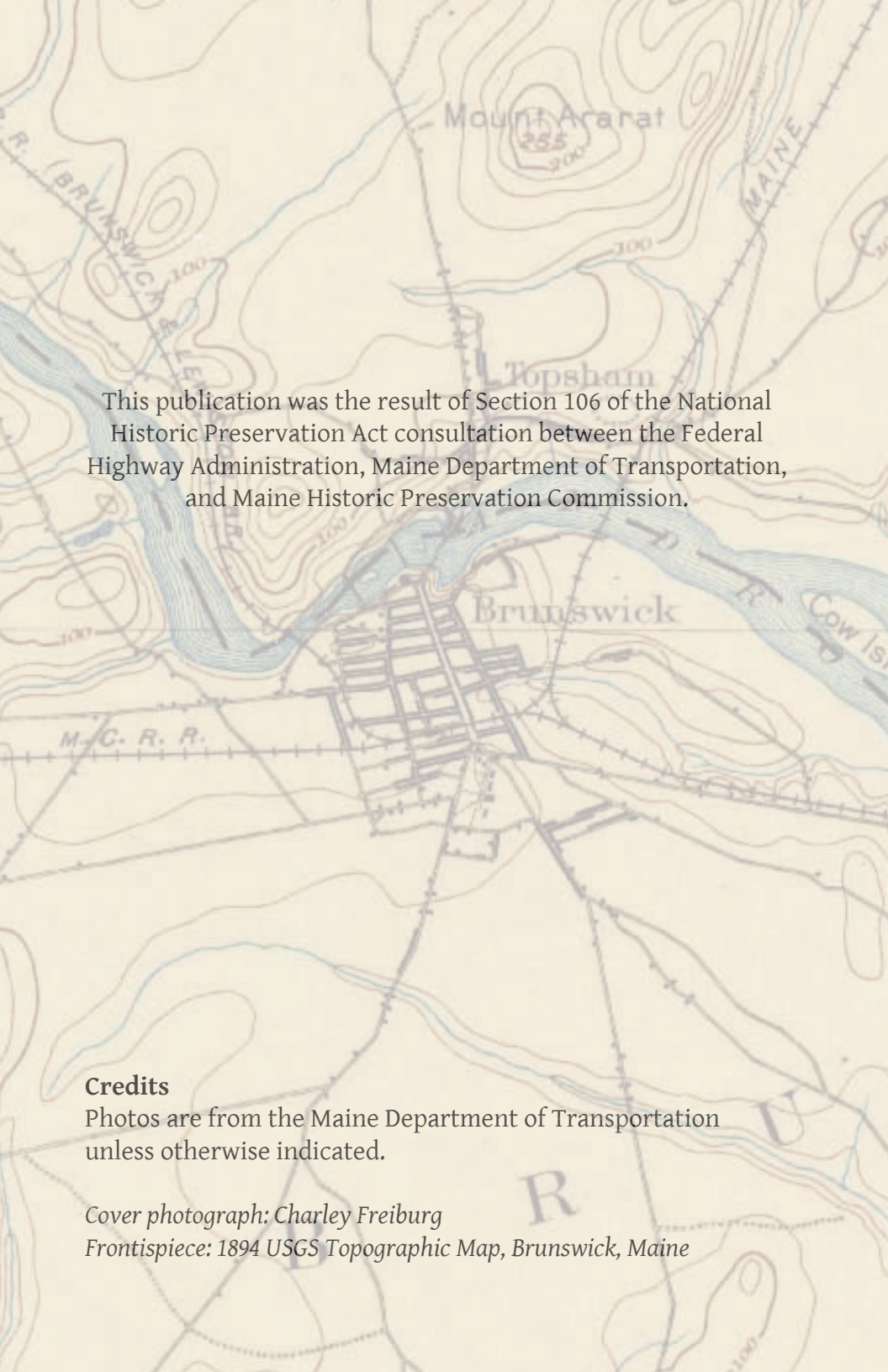


# Bridging The Falls:

A short history



**MaineDOT**



This publication was the result of Section 106 of the National Historic Preservation Act consultation between the Federal Highway Administration, Maine Department of Transportation, and Maine Historic Preservation Commission.

**Credits**

Photos are from the Maine Department of Transportation unless otherwise indicated.

*Cover photograph: Charley Freiburg*

*Frontispiece: 1894 USGS Topographic Map, Brunswick, Maine*

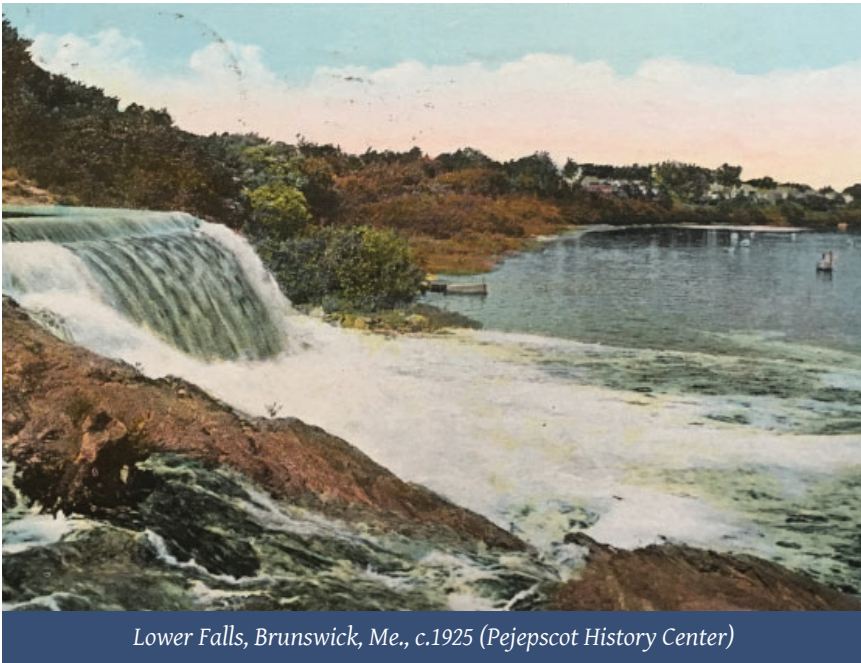
## Acknowledgements

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**Federal Highway Administration**  
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**Town of Topsham**



## The Falls

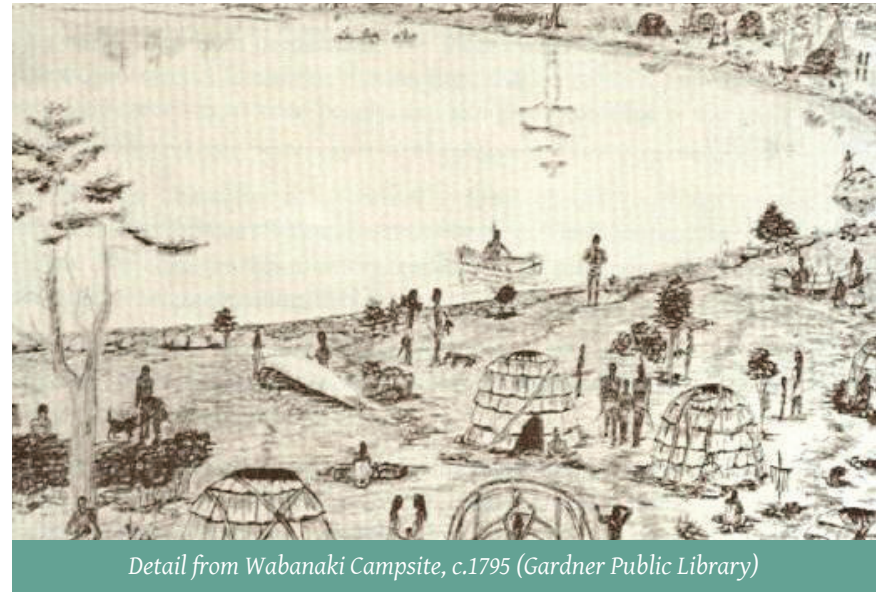
Brunswick and Topsham grew on either side of an impressive set of falls on the Androscoggin River. The Brunswick Falls are made up of three falls that rise a total of 40 feet above high tide. The lowest set of falls is especially powerful. In an 1835 survey of Maine's waterways undertaken to understand and promote the state's industrial potential, Colonel Loammi Baldwin found that the Androscoggin discharged more water than any other river in the state. At its lowest stage, the river moved 4,000 cubic feet or nearly 30,000 gallons per second.<sup>i</sup> This astounding flow was a windfall for those who had the resourcefulness to harness it. The power contained within the waters of the Androscoggin led to the success of many towns along its banks, including Brunswick and Topsham.



*Lower Falls, Brunswick, Me., c.1925 (Pejepscot History Center)*

## Wabanaki Era

The earliest human inhabitants of the Brunswick-Topsham area were the Wabanaki. There was a substantial settlement near the confluence of the Androscoggin, Kennebec, and Eastern Rivers, located approximately fourteen miles downriver of the Brunswick Falls. Based on current research, it is thought that members of the Tribe also resided, at least seasonally, at the Brunswick Falls. They fished, dug clams, harvested berries, and grew corn along the lower section of the river. Their culture was based around family groups, rather than specific river drainage areas as initially assumed by European colonists. The Wabanaki traveled along Maine's coastline and throughout the interior via rivers and lakes using lightweight birchbark canoes. When they encountered falls, the Wabanaki would leave the river and carry their vessels until they reached calmer waters. The European-Americans termed these spots 'Carrying Places,' one of which was located at the Brunswick Falls.<sup>ii</sup>



*Detail from Wabanaki Campsite, c.1795 (Gardner Public Library)*

# Europeans Arrive at the Brunswick Falls

Thomas Purchase arrived around 1628 on the Brunswick side of the river and established a trading relationship with the local Wabanaki. Thomas Gyles was the first European to arrive in Topsham c.1669, settling at Pleasant Point. Records indicate that initial interactions between the Wabanaki and the Europeans were amicable, but 1675 marked the start of a series of wars that spread throughout New England and lasted until 1748. The fighting slowed any sizable permanent European community from taking hold in the Brunswick-Topsham area. Both sides suffered significant losses, with homes and communities destroyed. The nearly seventy-five years of turmoil left the Wabanaki exhausted, both in numbers and in morale. When conflicts in the Brunswick-Topsham area ended in the early eighteenth century, the surviving Wabanaki gave up their ancestral homelands and relocated north to Canadian territory. European colonists returned and establish permanent communities.<sup>iii</sup>



Detail from "The Harbour of Casco Bay and Islands Adjacent, 1764" (Osher Map Library)

**1675-1678**  
King Phillip's/  
Metacom's  
War

**1690**  
Fort Andros  
destroyed

**1702-1713**  
Queen Anne's  
War

**1722-1725**  
Dummer's War

**1744-1748**  
King George's War

**1688**

King William's War  
begins; Fort Andros  
constructed on the  
Brunswick side of  
the river

**1697**

King  
William's War  
ends

**1715**

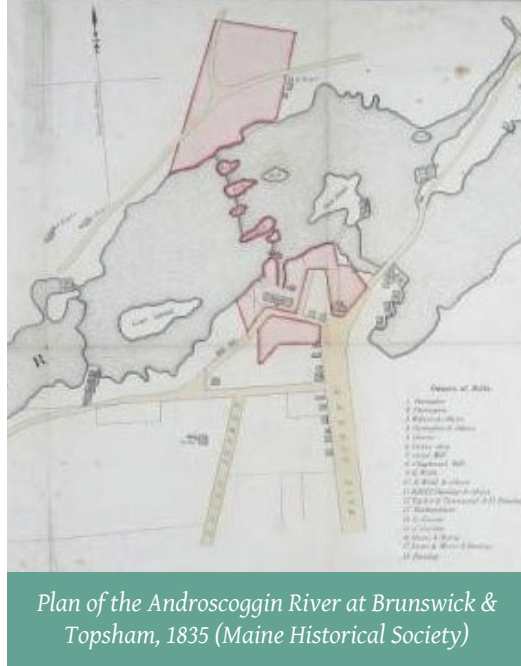
Fort  
George is  
constructed  
on the site of  
Fort Andros

**1736**

Fort George  
dismantled

# Industrial Development

After the end of the wars, the area adjacent to the Falls quickly developed into an industrial hub. The Falls were harnessed as a power source through a series of dams. This likely coincided with the establishment of a permanent population, who used the hydro-power to mill grain and cut wood. Brunswick was incorporated as a town in 1738. Topsham was slower to gain inhabitants and was eventually given township status in 1764.<sup>iv</sup>



Plan of the Androscoggin River at Brunswick & Topsham, 1835 (Maine Historical Society)

*“The lay of land about these falls is favorable to the growth of a great manufacturing city.”*

Colonel Loammi Baldwin  
in *Water-Power of Maine*, 1835<sup>v</sup>

**c. 1753**  
Upper dam  
constructed

**1756**  
Long Dam  
constructed

**c. 1761**  
Sawmill  
construction on  
upper dam

**1772**  
Middle (or  
Factory) Dam  
constructed

**by 1795**  
Corn mill  
constructed on  
upper dam

**by 1820**  
Grist mill constructed  
on upper dam

## Industry at the Falls

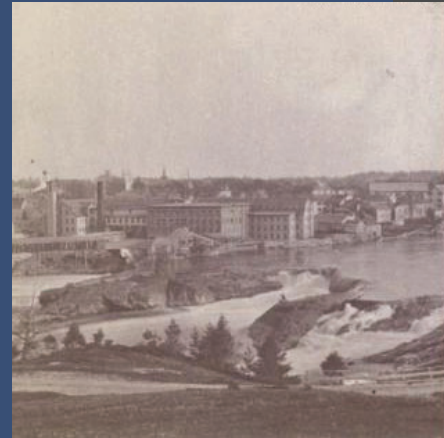
The Brunswick Falls have powered a wide variety of industries over the past several hundred years, including grist, lumber, paper, and textiles. The establishment of industry closely followed the period of permanent settlement, beginning c.1742 and continued steadily over the next one hundred and forty years. The first dam was built c.1753 at the upper falls in order to concentrate the power of the river. More dams were added in the 1770s, including one from Shad Island at the lower falls.<sup>vi</sup>

By the 1840s dams had been constructed across the upper falls, middle falls, and on both sides of Shad Island. The first mill to be built was likely a grist mill located at a site near the former colonial fort, c.1742. The first sawmill was built by 1753, and within twenty years two more were erected on Great (currently Bowdoin) Mill Island in Topsham.

In addition to grist and sawmills, other industries at the falls included a pulp mill, jewelry and watch box makers, and a factory for windows, doors, and clapboards.<sup>vi</sup> Two of the most successful ventures were the Bowdoin (later Pejepscot) Paper Manufacturing Company, established in 1875, and Cabot Manufacturing Company, a textile producer established in 1858.



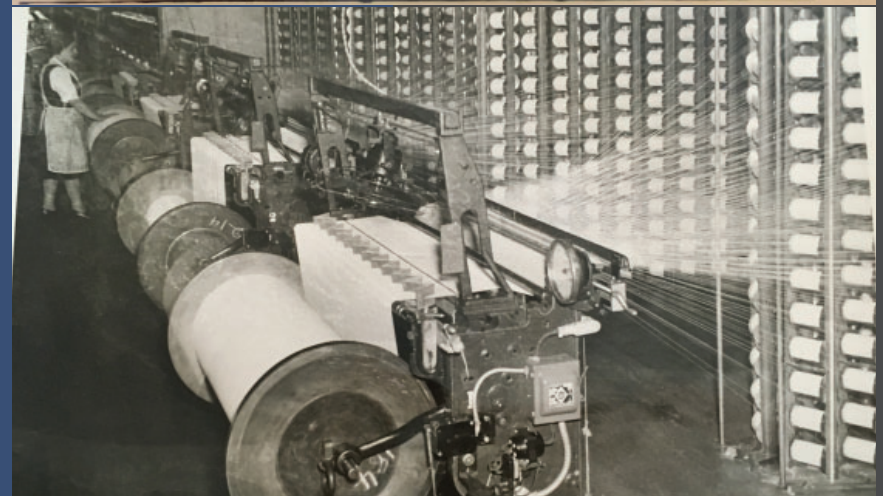
1884 Sanborn Fire Insurance Map of Brunswick Island in Topsham.



Left Photo: Androscoggin River, Brunswick, ca.1880 (Pejepscot History Center)



Middle Photo: Cabot Mill, c.1900 (Pejepscot History Center)



Bottom Photo: Warp Room, Cabot Mill (Pejepscot History Center)

# Connecting Brunswick and Topsham at the Falls



*Bridge over Androscoggin River, at Brunswick, 1835 (Pejepscot History Center)*

The concentration of industry on both sides of the Androscoggin River at the Falls necessitated an easy, direct way to travel between the two communities.

The first crossings

were made by ferry, but not near the Falls due to the swiftly moving water. In 1796, a group of citizens took action, forming the Proprietors of the Androscoggin Bridge. They constructed a toll bridge over the Falls, built from Nye's Sawmill in Brunswick (currently the location of the 250th Anniversary Park) to the Middle Rock and then angled slightly to the Great Mill Island in Topsham.

The 1796 bridge was the first of at least nine structures that have bridged the Falls. For the next one hundred and thirty years, the bridge between Brunswick and Topsham followed the same alignment until a farmer named Frank J. Wood came up with an alternative.<sup>vii</sup>



*Old Toll Bridge with Bowdoin Paper Mill behind, c.1875 (Maine Historic Preservation Office)*

**1796**  
First bridge constructed

**1811**  
Second bridge constructed

**1814**  
Part of second bridge and toll house carried away by freshet

**1820**  
60-foot section of bridge and 2 mills destroyed by spring flood

**1827**  
Bridge completely washed away and replaced with 3-span wooden truss bridge on stone abutments

**1842**  
Bridge is destroyed by fire

**1877**  
Steel Bow Arch bridge constructed

**1881**  
Bridge replaced

**1889**  
5-span double intersection Warren truss bridge constructed

**1932**  
Frank J. Wood Bridge opens

## Wood

The early bridges were constructed of wood on a wooden substructure, which offered little defense against floods and fire. Spring floods frequently damaged or even completely destroyed early bridges. Stone piers were added in 1827 to provide a more secure base. Fire was another threat, with one destroying the bridge in 1842. The bridge was eventually covered to protect travelers from the elements. Not everyone felt the enclosure was an improvement; women travelers feared what or who could be lurking in the resulting darkness. Young men would often “run the toll” for the thrill of it before the toll was eliminated in 1871.<sup>viii</sup>

## Metal

In the mid-nineteenth century, a new building material was revolutionizing the engineering field: iron. Beginning in the 1840s, cast and wrought iron bridges were constructed in the U.S., particularly on railways.

Some engineers were hesitant to embrace iron due to the variable quality of the new material, the lack of scientific knowledge, and iron’s unproven track record. The collapse of the New York and Erie Railroad bridge in Lackawaxen, Pennsylvania in 1850 only added to the skepticism. However, enough engineers and bridge companies were willing to take a chance on iron and eventually metal replaced

### Iron:

Pure iron is a silvery-white, relatively soft material that can be cut with a knife. When alloyed with carbon in different percentages, it becomes very hard. Wrought iron has a carbon content of less than 0.08% while cast iron has a carbon content of greater than 2%. Carbon steel falls in between, with a carbon content between 0.05 to 2.1%.



1889 Iron Bridge (Pejepscot History Center)



wood as the preferred bridge material. Light and strong, with proper engineering iron could be used to build taller and longer structures than previously possible using wood or masonry.

As bridge engineering training became more formalized, public confidence in bridge designs also increased. In 1877 the crossing between Brunswick and Topsham was upgraded with an iron Bow Arch bridge. Despite the advances in technology and training, there was still an element of trial and error to bridge design. Within two years of its construction, the strength of the new iron bridge was called into question by Bowdoin College professor George L. Vose, author of a book titled *Bridge Disasters in America: The Cause and Remedy*. Vose and the



Historic American Engineering Record,  
National Park Service

King Bridge Company exchanged a series of heated letters to the editor published in the local newspaper. The editors of the paper eventually sided with Vose, expressing their doubts as to the quality of the bridge's construction and declaring "that we have never had the first particle of confidence

**[FOR THE TELEGRAPH].**  
**DANGEROUS BRIDGES.** The iron bridge at the foot of Main street, and the iron spans of the Bay Bridge, both of which have recently been built by the King Bridge Co. of Cleveland, Ohio, are neither of them safe or fit for public travel, and never were. The design is bad, and the detail is bad; and one of these days they will tumble down, and the town or county will have to pay the damage. Would it not be well to pull these wretched traps down before they fall, and spend our money for decent bridges instead of paying for some fatal disaster which does nobody any good?

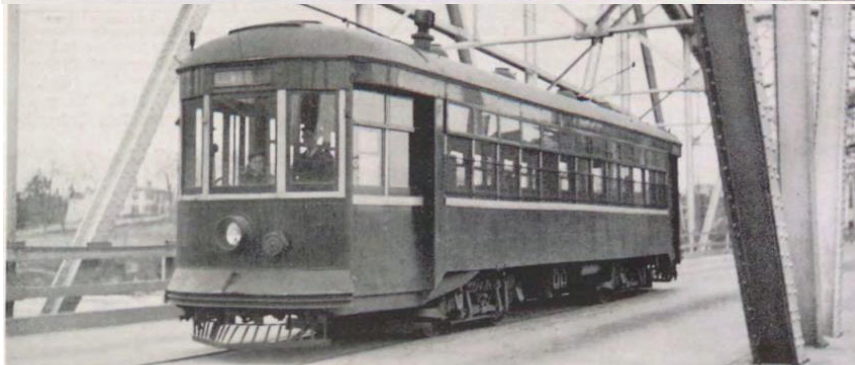
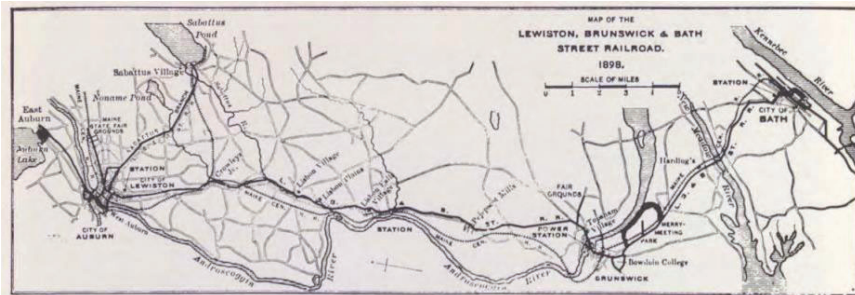
Letter to the Editor of the Brunswick  
Telegraph, November 8, 1878

in the disposition of the Company to deal fairly with the town, nor in their ability to do a decent job of iron work." After having the bridge inspected, the Town of Brunswick erected a new iron bridge in 1881 (though they again contracted with the King Bridge Company). The bridge was replaced again in 1889 with a 5-span double intersection Warren truss.<sup>ix</sup>



# New Modes of Transportation

In the late nineteenth and early twentieth centuries, street railways and automobiles revolutionized how people traveled short distances. Street railways transported passengers over smooth rails instead of unpaved, and typically bumpy, roads. This new technology coincided with the movement of people leaving dirty, crowded cities for the peace and cleanliness of the countryside. Street railways allowed these new suburbs to grow exponentially. Initially pulled by horse, street trolleys were powered by electricity beginning in the 1880s, utilizing the excess power generated by hydro-electric companies. The electric cars could travel greater distances in shorter lengths of time, providing connections to smaller towns and rural areas, as well as transporting people from the suburbs into the city.



Top: Route Map of the Lewiston, Brunswick & Bath Street Railway; Bottom: A trolley car on the Frank J. Wood Bridge (Connecticut Valley Chapter - National Railway Historical Society)

An electric trolley track was added to the Brunswick-Topsham bridge in the 1890s. The Brunswick Electric Railroad Company was incorporated in 1889 (though service did not commence until 1896). The initial route ran from the Sagadahoc County Fairgrounds, in Topsham, south along Winter and Main Streets, then across the Androscoggin River into Brunswick, where it continued up Maine Street to Bowdoin College, before terminating in Harpswell. Eventually service was expanded to Lewiston and Bath and the line became part of the Lewiston, Brunswick & Bath (LBB) Street Railway in 1898. From Lewiston, travelers could transfer to lines that brought them to Portland or Augusta. Many trolley companies also constructed parks to accompany their lines and increase weekend ridership. The precursor to modern amusement parks, these trolley parks featured large pavilions surrounded by landscaped grounds, along with rides, zoo animals, and other attractions. In Brunswick, Merrymeeting Park hosted pleasure seekers in a large casino, an outdoor amphitheater with 1,000 seats, and a zoological garden.<sup>x</sup>



Merrymeeting Park, c.1898 (Seashore Trolley Museum)

## The Automobile

By the 1920s, Brunswick and Topsham had grown to bustling commercial, industrial, and residential hubs on the Androscoggin. The combined population of just under 10,000 residents was made up of mill employees, students, small business owners, and small scale farmers. The aging iron bridge over the Androscoggin River was not able to keep pace with the growing population and the new technology of not only the street trolleys but, more importantly, the latest innovation in transportation - the automobile. Both trolleys and automobiles brought increased loads and speed. The bridge's alignment was logistically unsuited to automobiles. The approaches were curved and the crossing included a second narrow bridge over the channel that ran along the west side of Bowdoin Mill Island on the Topsham side. (Called Granny Hole Stream, the narrow stream acquired its name after one Betty Watts fell through the ice one winter and had to be rescued.)<sup>xi</sup>

## The Trolley Accident

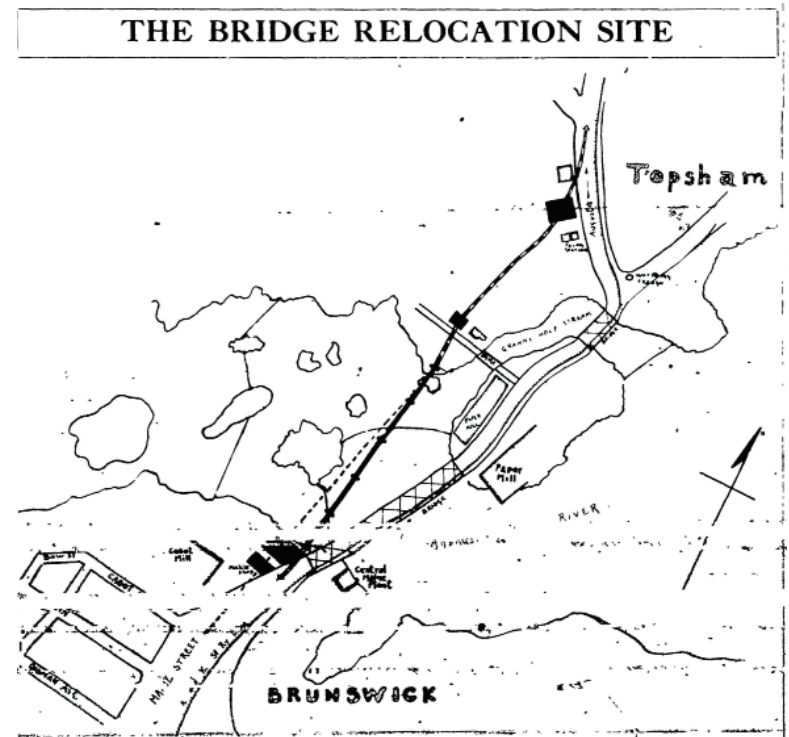
The already structurally stressed Brunswick-Topsham Bridge was made even more unsafe in January 1928 after a trolley car jumped the tracks as it approached the river and hit the bridge, destroying the supports on the eastern side of the first span and throwing a section of one of the trusses into the mill pond on the upstream side. In October 1929, the Maine State Highway Commission (MSHC), precursor to today's Maine Department of Transportation, began planning for a new structure.<sup>xix</sup> The new bridge would be built on the same alignment of the existing bridge but with an eight-foot wider roadway, requiring the taking by eminent domain of a strip of land from the Pejepscot Paper Company's Bowdoin Mill, whose mill yard was divided by Main Street.<sup>xii</sup>



# Frank J. Wood

Topsham farmer Frank J. Wood was unsatisfied with the plans to replace the bridge on the same alignment. He was vocal in his call for a new alignment just upstream of the existing bridge, arguing that it would be both safer and more practical. Wood's proposed bridge traveled in nearly a straight line from the Brunswick shore to the west bank of the Granny Hole Stream, eliminating the dangerous curve on the Topsham side as well as the need for a second crossing over the Granny Hole Stream. It also removed the roadway from the center of the Bowdoin Mill yard, which no doubt represented a significant improvement for the paper mill. With support from other Topsham and Brunswick residents, Wood submitted a petition to the MSHC formally requesting the consideration of his alternative alignment in July 1930. Nearly 200 citizens attended an August meeting organized by MSHC, county commissioners and town selectmen to show their support. An agreement was finally reached the following month to implement Wood's plan.<sup>xiii</sup>

A life-long resident of the area, Wood was born in Topsham in 1861. He worked as the night superintendent at the Pejepscot Paper Company's Bowdoin paper mill before retiring and running a farm on Middlesex Road. He was unafraid of sharing his opinions, earning the nickname 'Senator.' After successfully advocating for the new bridge alignment, he traveled to Augusta to present his ideas on a new highway to Bath (the Route 1 Bypass between Brunswick and Bath would eventually be constructed in 1966). According to his wife Helen, he "could make a speech on anything he was interested in..." He died in 1935.<sup>xiv</sup>



Plan of new alignment published in *The Brunswick Record*, September 4th, 1930

## The Frank J. Wood Bridge

The MSHC chose the Warren thru truss to support the new three-span bridge, a common bridge design. The bridge is composed of two identical trusses and a third smaller truss, supported by concrete piers and abutments. Because it was designed to carry the street railway, the bridge is wider and taller than other truss bridges of the same length. The bridge officially opened in 1932 and was given the name of the farmer whose commonsense proposal won over MSHC bridge engineers.



### WARREN

WITH VERTICALS  
MID 19TH-20TH CENTURY

DIAGONALS CARRY BOTH COMPRESSIVE AND TENSILE FORCES. VERTICALS SERVE AS BRACING FOR TRIANGULAR WEB SYSTEM.

LENGTH: 50-400 FEET  
15-120 METERS

Historic American Engineering Record,  
National Park Service



*Clockwise from top left: Construction of the Frank J. Wood Bridge, the new bridge with the old bridge behind (Pejepscot History Center), street trolleys on the Frank J. Wood Bridge, c.1938 postcard of completed bridge (Boston Public Library)*

*Buckled roadway after the Flood of 1936*

**The Warren truss was a popular bridge design** throughout the United States in the late nineteenth and early twentieth centuries. British engineers James Warren and Willoughby Monzani patented the design in 1848. The truss is characterized by a triangular pattern outlined with diagonals that are alternately placed in tension or compression. The straightforward design of the Warren truss made it a popular bridge type in the early twentieth century but by 1930, truss bridges were falling out of favor with bridge engineers as reinforced concrete and steel stringer bridges gained popularity.<sup>xv</sup>

**Several years after opening, the Frank J. Wood Bridge** withstood one of the most devastating floods on record in Maine. On March 14, 1936, ice floes jammed in the narrows at the entrance to Merrymeeting Bay down river of the Falls, causing the river to build up behind it. In Topsham, water rushed over Main Street, overwhelming the catch basins and drains on the approach to the bridge. The concrete pavement of the approach buckled and a building was washed away. The water rose as high as the bridge deck but the bridge itself was unscathed. The only damage suffered was to the struts supporting the water pipe that ran underneath the bridge.<sup>xvi</sup>

# The 30-Minute Mile

Until the Topsham Route 1 bypass was completed in 1997, drivers had no alternative than to travel through downtown Topsham and across the Frank J. Wood Bridge in order to access Route 1 in Brunswick. The daily traffic jam caused by commuters traveling from Routes 196 and 201 to Route 1 was dubbed the “30-minute mile.” Bumper stickers were made for those drivers who wished to identify themselves as “survivors of the 30-minute mile.”



## Endnotes

<sup>i</sup> George Augustus Wheeler and Henry Warren Wheeler, *History of Brunswick, Topsham, and Harpswell, Maine, Including the Ancient Territory Known as Pejepscot* (Alfred Mudge & Son, Printers: Boston, 1878), 554.

<sup>ii</sup> David L. Ghere, “The Disappearance of the Abenaki in Western Maine: Political Organization and Ethnocentric Assumptions” in *After King Philip’s War: Presence and Persistence in Indian New England*, ed. Colin G. Calloway (Lebanon: University Press of New England, 1997), 72-74; *Brunswick, Maine: 250 Years a Town, 1739-1989* (Brunswick, ME: Town of Brunswick, 1989), 13; Charles M. Starbird, *The Indians of the Androscoggin Valley: Tribal History, and their Relations with the Early English Settlers of Maine* (Lewiston: Lewiston Journal Printshop, 1928), 16-17, Wheeler, 6

<sup>iii</sup> Wheeler, 8, 10, 49-70; *Historical Almanac of Brunswick, Me.* (Brunswick, ME: Adams & Townsend, 1896), 19; Ghere, 74.

<sup>iv</sup> Wheeler, 27, 72-73, 215.

<sup>v</sup> Wheeler, 554.

<sup>vi</sup> Wheeler, 32, 78-81, 215, 553-554, 556-562, 572-573; C.J. Noyes, *A Plan of Brunswick Village*, (Boston: J.H. Bufford & Co. Lithograph, September 1846).

<sup>vii</sup> Wheeler, 557-560, 606; Noyes, *Atlas of Cumberland County, Maine*, (New York: F.W. Beers: 1871).

<sup>viii</sup> Wheeler, 550; “Old Covered Bridge Across Androscoggin Source of Terror to Female Population,” *The Brunswick Record*, 13 February 1930.

<sup>ix</sup> Llewellyn Nathaniel Edwards, *A Record of History and Evolution of Early American Bridges* (Orono: University Press, 1959), 63-73; “Old Covered Bridge Across Androscoggin Source of Terror to Female Population,” *The Brunswick Record*, 13 February 1930; “Letter to the Editor,” *The Lewiston Journal*, 14 November 1878; “The Main Street Bridge,” *Brunswick Telegraph*, 3 January 1879; *Historical Almanac of Brunswick, Me.*, 17; “The Main Street Bridge,” *Brunswick Telegraph*, 5 November 1880.

<sup>x</sup> Richard Osmond Cummings, “Trolleys to Brunswick, Maine—1896-1937” in *National Railway Historical Society Transportation Bulletin*, No. 73, January/December 1966, pp. 1-42.

<sup>xi</sup> Wheeler, 79; “Trolley Jumping Rail Narrowly Escapes Plunge Into Icy Waters,” *The Brunswick Record*, 26 January 1928; “State Engineer to Start Survey and Estimate on Topsham Bridge at Once,” *The Brunswick Record*, 31 October 1929.

<sup>xii</sup> “New Topsham Bridge to Be Started This Summer—To Be Steel and Wider Than Now,” *The Brunswick Record*, 24 April 1930; “New Location for Topsham Bridge is the Proposal of Frank J. Wood of Topsham,” *The Brunswick Record*, 10 July 1930; “Relocation of Topsham Bridge Well Considered,” *The Brunswick Record*, 21 August 1930; “Indications Point to Re-location of New Brunswick-Topsham Bridge,” *The Brunswick Record*, 4 September 1930; “Brunswick-Topsham Bridge Will Be Built in New and Better Location,” *The Brunswick Record*, 18 September 1930.

<sup>xiii</sup> Frank J. Wood Household, U.S. Federal Census, Topsham, Sagadahoc County, Maine, 1920, 1930; Bridge owes site to a gift of gab,” *The Bath-Brunswick Times Record*, Brunswick, ME, 27 March 1967.

<sup>xiv</sup> David Gardner, Lisa Churchill-Dickson, eds., *Historic Bridges of Maine: 350 Years of Bridge and Roadway Design* (Augusta, ME: Maine Department of Transportation, 2015), 77-78

<sup>xv</sup> “Mills and Homes Along River Making Repairs,” *The Brunswick Record*, 19 March 1936.

<sup>xvi</sup> “Normal Conditions Return as the Raging River Subsides,” *The Brunswick Record*, 26 March 1936.