

## Feature

### Driving Into The Past The Covered Bridges Of Eastern Canada

by Louise Abbott

*“Waterville [Quebec]. One of the few remaining covered bridges in the area collapsed into the Massawippi River early Wednesday morning after a fire destroyed the 132-year-old structure.”*

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During the heyday of covered-bridge building in Canada, more than 1,000 covered bridges were built in Quebec, while several hundred were built in New Brunswick. Today 88 of those vintage bridges remain in Quebec; 64, in New Brunswick. The most famous one passes over the Saint John River in the town of Hartland, New Brunswick. Inaugurated as an open bridge in 1901, it later became, at 391 m (1,282 ft.), the longest covered bridge in the world. Most of the other historic covered bridges in the two provinces are tucked away on country roads, surrounded by fields or forests. Some remain in service; others have been closed to traffic for years. A few have been carefully dismantled and then reassembled in a new location for tourists to admire.

Almost every year the number of covered bridges declines, as weather, wear-and-tear, neglect, and willful destruction take their toll. Despite the odds, preservationists persist in trying to stave off additional losses. As they point out, these old wooden truss bridges constitute an integral part of our built heritage. Evidence suggests that the first covered bridge in Quebec was constructed around 1800 in the vicinity of Montréal. But the heartland of covered-bridge building in the province lay farther south in the Eastern Townships. Dozens of covered bridges were erected there; twenty survive.

In the early nineteenth century, settlers in the Eastern Townships had to travel by navigable waterways or by blazed trails. As the population and prosperity of the area increased, roads and bridges were built to connect communities to each other and to more distant markets. By the 1830s, covered bridges were appearing. In 1837, for example, the British American Land Company, which had purchased over one million acres in the Eastern Townships to sell to prospective colonists, had deposited plans for a covered plank bridge over the St. Francis River in Sherbrooke. According to the specifications, “the roof [was] to be well coated with coal tar, sanded while hot with fine sand. The side walls [were] to be washed with good lime and saltwash.” That bridge has disappeared, but another built in the region in 1845—the Guthrie Bridge in St. Armand—is still in use; it is the oldest extant covered bridge in Canada.

Covered bridges also became a prominent feature of the New Brunswick landscape during the nineteenth century. John and Stephen Gillis, the authors of *No Faster than A Walk*, believe that “familiarity with the covered bridge and knowledge of the efficiency of the wooden truss may well have been imported into New Brunswick with the arrival of the United Empire Loyalists in the 1780s.” This is certainly possible; after all, covered wooden truss bridges had been built in medieval Europe, and Italian architect Andrea Palladio had explained the mechanics of the truss—a structural frame that exploits the rigidity of the triangle—in his sixteenth-century *Treatise on Architecture*. Nonetheless, covered-bridge building in New Brunswick, as in Quebec, did not gain momentum until after its popularization in the United States.

Timothy Palmer, a Massachusetts bridge architect, designed a covering for an American bridge in 1806. A bridge-building company had hired him to design an open bridge over the Schuylkill River in Philadelphia. His design incorporated three spans of 46 m (150 ft.), 60 m (195 ft.), and 46 m (150 ft.), each with a multiple kingpost truss—a series of vertical beams with diagonal supports. When construction was nearing completion, the company decided to reduce maintenance costs and extend the life of the bridge by sheltering the trusses, abutments, and decking from the elements. The structure became the first documented covered bridge in America.

Shortly after, Theodore Burr of Connecticut designed a bridge that was later covered across the Hudson River in Waterford, New York. His plans supplemented a multiple kingpost truss with two laminated wooden arches that rested on the abutments at either end of the bridge. The “Burr arch truss” was exceptionally strong but difficult to repair.

In 1820 another inventive Connecticut man, Ithiel Town, patented a design for a truss in which timbers were crisscrossed diagonally like latticework. They were pegged to each other and to the upper and lower horizontal timbers—“chords,” in bridge terminology—by wooden pins, or “trenails.” Town promoted his design, and it became popular for covered bridges because it used smaller-sized lumber than other trusses; it could be constructed quite easily; and it could span distances of up to 67 m (220 ft.).

William Howe of Massachusetts also designed a truss that was widely adopted for covered bridges. It featured timber diagonals with vertical tension rods of iron or steel that could be tightened if the bridge started to sag. He patented his design in 1840 and extended the patent in 1850 with more improvements. In combining metal and wood, the Howe truss produced remarkable strength over long spans and was an important precursor to the modern all-steel truss. In eliminating the need for notching and pegging timbers, it was even simpler to construct than other trusses. Indeed, it could be built of prefabricated parts shipped by rail. American bridge historian Eric DeLony characterized Howe’s innovation as “the closest that wooden-bridge design ever came to perfection.”

Covered bridges—built high enough and wide enough for a loaded hay wagon—sat on their abutments, but were not fastened to them. No matter how strong the truss, therefore, the speed of passage in a covered bridge had to be regulated. A trotting or galloping horse would set in motion a vibration on the bridge that could harm the trusses or even dislodge them from their abutments. Signs warned bridge users to walk their horses or pay a fine.

Since many of the early bridge builders in Quebec and New Brunswick had ancestral roots in the United States and lived relatively close to the American border, they looked south for inspiration. In Quebec the original Town truss and, later on, a variant called the Quebec Town truss became the most widely used for covered bridges. In New Brunswick the Howe truss was the most common.

In both provinces, however, various trusses were tried. The most unusual was the McCallum truss in the Percy Bridge in southwestern Quebec. New York engineer Daniel McCallum had created an “inflexible arched truss” in 1851 to reduce vibrations on long-span wooden railway bridges. Ten years later, when contractor Robert Graham was hired by the Huntingdon County Council to construct a covered bridge over the Châteauguay River in Powerscourt, he adapted the McCallum truss. The two-span Percy Bridge is unique and has federal and provincial heritage status.

In addition to differences in trusses and in overall dimensions, differences in other structural components, ranging from the abutments to the decking, made each covered bridge distinctive. Quebec bridge builders tended to rely on locally available wood, such as hemlock for the structural members, and cedar for the siding and the roof shingles. New Brunswick bridge builders preferred Douglas fir imported from British Columbia for the bridge chords. Otherwise they used indigenous black spruce, hemlock, and cedar as building materials.

Wherever they were built, covered bridges required a substantial outlay of funds. Sometimes an individual—say, a mill owner who wanted to give patrons easy access to his property—financed the construction. More often, a group of local businessmen raised the funds, and, to regain their investment, charged a toll. Municipal, regional, and provincial governments also financed many bridges. In the 1890s the Department of Colonization took charge of covered bridges in Quebec, while the Bridge Department took charge of them in New Brunswick. Both departments built covered bridges until the 1950s. The Department of Colonization usually painted the siding oxblood red. The Bridge Department simply let the boards turn silvery grey with age.

Quebec and New Brunswick were not the only provinces in central and eastern Canada in which covered bridges were constructed. At least seven were built in Ontario; one still stands in West Montrose. Upward of ten covered bridges were built in Nova Scotia; the last one was torn down in the 1960s.

Covered bridges traditionally provided a refuge for travellers caught in stormy weather and, on occasion, a venue for public gatherings. The inside timbers were ideal for displaying advertisements for assorted products, as well as for posting notices of coming events, like county fairs. Evangelists sometimes painted admonishments on them, and couples carved hearts with their initials paired within. Because legend had it that a wish made while driving through a covered bridge would come true, covered bridges were referred to as “wishing bridges.” Because they offered a secluded spot for romance, they were also called “kissing bridges,” although, strictly speaking, the name “Kissing Bridge” belongs to a long-gone bridge in New York City. In Hartland, petitioners tried to prevent the local bridge from being covered after a Baptist minister predicted that it would corrupt the region’s youth. The government was undeterred. As one official said, “If the morals of the young people are so badly bent that it only requires a covered bridge to break them completely, there is little we, as the Government, can do about the matter.”

Covered wooden bridges could outlast open wooden bridges by several decades. But they were not immune to ice break-up and floodwater, and many were badly damaged or washed away during seasonal thaws or floods. As the twentieth century wore on and transportation modes changed, new bridge-building materials and designs were introduced. More often than not, covered bridges in need of maintenance were demolished and replaced by open bridges with structural members of treated wood, steel, or concrete.

In the mid-1960s, historical societies and other heritage-minded groups in Quebec and New Brunswick began to express concern at the fast-growing loss of covered bridges. Since then, they have made periodic appeals to government authorities to save significant examples, with mixed results. Two of the leading heritage associations—New Brunswick’s League for Rural Renewal and Quebec’s Société québécoise des ponts couverts—have faded away. But other organizations, many of them linked to heritage tourism, are renewing the efforts to preserve covered bridges.

In New Brunswick, where most covered bridges are in provincial hands, a considerable amount of restoration work is under way. “The province has finally realized that covered bridges are a tourist attraction,” says Bob Alston, a heritage activist and President of the King’s County Tourist Association. “If they disappear, there’s less reason for people to come here.” In Quebec, where most covered bridges are municipally owned, there is no uniform conservation policy, but covered bridges are also being promoted in tourism, spurring new initiatives to maintain them.

In both provinces, vandalism poses a serious threat. Because they are generally in isolated locations, covered bridges are difficult to patrol. Timbers are deliberately defaced, damaged, and stolen. Bridges are burned, particularly on Hallowe’en. Many conservationists believe that the best way to stop such irresponsible actions is to stop the publicity that wrongdoers receive, albeit anonymously. When reporters ask Mr. Alston to comment on a bridge burning, he declines.

What he and other covered bridge aficionados willingly discuss is how worthwhile it is to retain and celebrate these archaic bridges. “There are only 1,500 covered bridges left in the world,” Mr. Alston explains, “and there are people who travel all over to see them. They’re similar to birders—they’re ‘bridgers.’ In Quebec and New Brunswick, we have about 150 covered bridges. All we have to do is take care of them, and people will come for a tour.”

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