

On Chief Wawatam, 100-year-old Hand-hammered Rivets Held Tight Until the End

By Frank Straus

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News reports indicate that the barge *Chief Wawatam*, the hull of the former railroad ferry that served the Straits of Mackinac for more than 70 years, is being scrapped at its owner's shipyard, Purvis Marine Limited in Sault Ste. Marie, Ontario. The *Chief Wawatam* was launched in 1911 as a self-propelled icebreaker with a heavy deck used to carry up to 22 loaded railroad cars (some say 26 cars) weighing up to 3,000 tons. Although the vessel was cut down to a barge in 1989, its engines removed, and its upper works torn away, Purvis kept the barge's railroad deck, which became a flatcar space for cargoes bound to or from Sault Ste. Marie. The deck was particularly useful in carrying "charges" of scrap iron to the nearby Algoma steel mill.

In 2009, however, the heavy old deck gave way, ending the vessel's useful life after 98 years of service on the upper Great Lakes. At the time of its scrapping, the *Chief Wawatam* was one of the last vessels still floating on the Great Lakes that had survived the Great Storm of 1913. Contemporary news accounts published by a predecessor of the *Town Crier's* sister paper, *The St. Ignace News*, tell us that the railroad ferry had faithfully shuttled back and forth across the Straits of Mackinac during the height of the storm.

The shipbreakers who are now cutting up the hull of the *Chief Wawatam* are cutting apart metal plates that were hand-riveted together almost a century ago. The iron or steel rivets were headed, blunt, smooth-sided bolts designed for one-time installation. The men (or boys; traditionally the rivet-heater was a child, a teenager, or an apprentice) used tongs to put their rivets into a coal firebox, where they would be heated to expand the metal. They would then literally toss the red-hot rivet to a two-man team of expert riveters, working one on each side of the plates to be riveted together. Using a specialized hammer, the "outside" riveter thrust the heated rivet, small end first, through a pre-drilled hole. The new, hot rivet formed a connection between the two iron or steel plates.

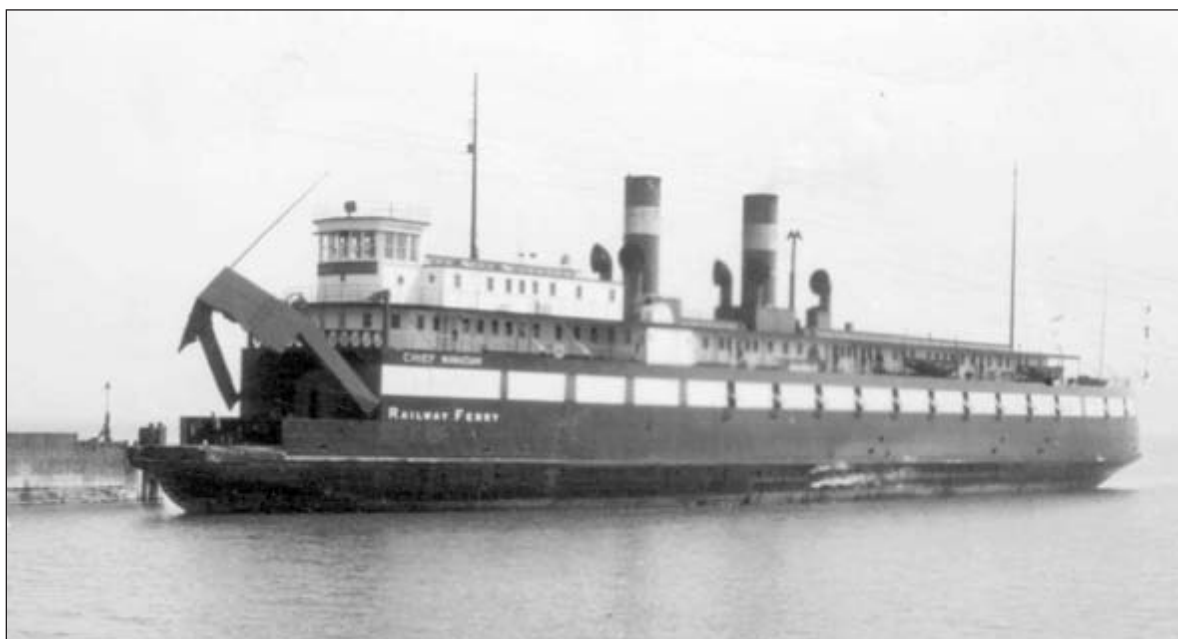
The "inside" riveter then went to work. With another specialized hammer, the second riveter literal-

ly bashed the shank and small end of the heated rivet into twisting or spreading until it spilled outside the dimensions of the connection hole. The hot rivet was then allowed to cool in place, reversing the thermal expansion. The shrinkage of the cooling rivet in its new hole securely knitted two plates of iron or steel together. The goal was to transform a piece of metal that, when cold, had been shaped like a bolt, into a piece of re-cooled metal shaped like a dumbbell – or like a bolt with a crooked tail. Either joint would have a long lifespan if the rivet-heads were kept painted and kept from getting rusty. Some 100-year-old rivets continue to do useful work today – for example, the rivets that pin together the structural iron of Paris's Eiffel Tower (1889).

It cannot be repeated too often that in 1911, the rivets that held the hull plates of the *Chief Wawatam* together were hand-hammered into place. For at least the first hundred years of what we call the "Industrial Revolution," human and animal muscles were still an essential part of the coal-fired energy system. By 1954, when the Mackinac Bridge construction was begun, inventors had developed diesel-powered pneumatic hammers – we often call them "rivet guns" – to pound rivets into place, and those were the hammers used by the men who built the great bridge; but in 1911 men were still hammering rivets by hand.

The *Chief Wawatam* was built fast. Toledo Shipbuilding laid down its keel June 1, 1911. Less than three months later, the hull was finished and the vessel was launched August 26. Carpenters and shipfitters then swarmed over the vessel to complete the pipefitting for the new boilers and raise the boat's upper works. By October 16 the boat was finished, and it sailed at once on its maiden voyage. Losing no time, its first crew pointed the vessel's bluff bow directly up the Detroit River and Lake Huron to the owner's dock at St. Ignace; the *Chief Wawatam* saw the Straits of Mackinac, its working home for the next seven decades, October 18.

For the new *Chief Wawatam*, from keel to active service had taken four and one-half months in 1911; today, nowhere on the Great Lakes, probably nowhere in the



The railroad ferry *Chief Wawatam* at the dock was launched in 1911. She was designed to break heavy ice in the Straits and carried railcars and automobiles between Mackinaw City and St. Ignace, operating until 1984. Around 1988, her hull was converted into a barge to carry steel to Detroit, Windsor, and Chicago. The *Chief's* deck is now beyond repair, and her owners, Purvis Marine of Sault Ste. Marie, Ontario, is scrapping the hull and will sell the steel. In her heyday, the *Chief* was a lifeline to security and commerce between the peninsulas.

United States, could a 350-foot vessel be built in that length of time. As a point of comparison, the new Coast Guard cutter *Mackinaw* is 240 feet long and was built in 2004-2006, from keel to active service, in 28 months.

The *Chief Wawatam's* owners, the Mackinac Transportation Company, had demanded speed in construction because they wanted the vessel to be ready for use in the winter of 1911-1912. The new ice-breaking railroad car ferry had been especially designed for cold-weather service on the Straits of Mackinac, with a bow propeller to help the vessel maneuver in tight spaces and suck water out from under the sheets and floes of ice to be broken. The bow propeller was conceptualized by Captain John McCarty of Mackinac Island, and

the concept was developed into reality by St. Ignace's Captain L.R. Boynton and his collaborator in this invention, naval architect Frank Kirby.

Experts believe the Straits of Mackinac icebreaking car ferries were the first vessels anywhere in the world to have bow propellers. These counter-intuitive propulsion blades were distant ancestors of the bow thrusters seen in commercial vessels operated today around the world.

The *Chief Wawatam*, with its hand-fueled, coal-burning boilers, hauled railroad cars between Michigan's Upper and Lower Peninsulas. For many decades it and its smaller, sister boat *Sainte Marie* were the most reliable connections in existence between the two halves of Michigan. The com-

pletion of the Mackinac Bridge in 1957 made it impossible, however, for a Straits of Mackinac railroad ferry to make money for its owners. Mackinac Transportation repeatedly petitioned and begged the State of Michigan or the federal government for financial help or permission to abandon the service. In 1984, the coal fires faded to ash for the last time in the boilers of old *Chief Wawatam*. The *Chief Wawatam's* old rivets had held strong for more than 70 years, and ahead were 20 years of additional working life as a cargo barge.

One day before the *Chief*

Wawatam's keel was laid, May 31, 1911, the White Star Line's Atlantic liner *Titanic* was launched. It, too, quickly went into service. Like the *Chief Wawatam*, the *Titanic* had a hand-riveted steel hull, but its first encounter with ice would be its last. Shipbuilders around the world were bewildered when, in April 1912, the oceanic vessel sank abruptly, two and a half hours after barely grazing an iceberg on its maiden voyage. The tragedy would remain a mystery for decades.

In 1985, the broken hull of the *Titanic* was rediscovered on the North Atlantic sea bottom, and salvage operations began – man. Americans have seen exhibitions of steel plates and memorabilia from the wreck. Four dozen rivets were recovered from the failed liner, and metallurgical tests began. Studies revealed that many of the *Titanic's* rivets had been forged from brittle iron, loaded with sulfur. Stressed beyond endurance by the ice, the rivets had cracked and popped, opening seams between the vessel's hull plates. The new discovery was first published in 1998, and was later confirmed by testing the salvaged *Titanic* metal and comparing it to better-made rivets of the same period.

If anybody during the late 1990s had been looking for well-made rivets hammered home by expert craftsmen in 1911, they could have gone to the upper Great Lakes, where old barge *Chief Wawatam* was ending its working life quietly carrying deckloads of scrap iron and rolls of sheet steel to and from Sault Ste. Marie.

More H1N1 Vaccines Are Recalled

About 4.3 million doses of nasal H1N1, or swine flu, vaccines have been voluntarily recalled by the manufacturer because their potency was degrading over time.

The Centers for Disease Control and Prevention reported there are no safety concerns with the vaccine made by MedImmune, and anyone who received the recalled doses does not need to be re-vaccinated. Michigan received 114,000 doses of the vaccine, according to the Michigan Department of Community Health.

The Luce, Mackinac, Alger, and Schoolcraft (LMAS) Health Department received 700 of the recalled batches, Health Officer Nick Derusha said, and 500 had already been administered by the time the announcement was made Monday, December 22. Of the 700 recalled doses, Luce County received 129 and administered all of them, Mackinac County was sent 199 and administered 102, Schoolcraft County obtained 154 and administered 118, Alger County was given 159 and administered 117, the Sault Ste. Marie Tribe of Chippewa Indians acquired 36 and administered 35,

and LMAS held 23 and administered 17 to employees.

Providers in Mackinac, Schoolcraft, and Alger counties will return any remaining doses to the manufacturer, as will the tribe, Mr. Derusha said. The Chippewa County Health Department did not receive any of the recalled vaccinations.

MedImmune's recall came a week after Sanofi Pasteur's recall of pediatric H1N1 vaccines, also owing to degrading potency.

Parent Coalition Offers First Cedarville Meeting

The Great Start Parent Coalition will host a parent meeting Thursday, January 7, from 5:30 p.m. to 7 p.m. at Les Cheneaux Community Library in Cedarville. The meeting will provide information about the parent coalition and how it can benefit families and the community.

For more information, contact Heather Bird at 643-0096.

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