



THE RADDATZ SUBMARINE

Over the years, history tells us of the many attempts to build a water vessel capable of submerging and resurfacing at will. Such crafts, often times built with “military needs” in mind, have been designed throughout the world all the way back to the 16th century. Some historians report the very first idea of a submarine came as early as 1580 when Englishman William Bourne offered a description he created for “a boat that could go underwater unto the bottom and come up again at your pleasure.”

Dutch inventor Cornelius Drebbel is given credit for creating the first submarine. He operated his machine below the waters of the English Thames River at depths of twelve to fifteen feet between the years 1620-1624. According to accounts, Drebbel’s invention was a “decked-over rowboat propelled by twelve oarsmen.” Best described, “The boat was designed to have almost neutral buoyancy, floating just awash, with a downward sloping foredeck to act as a sort of diving plane. The boat would be driven under the surface by forward momentum...just as are most modern submarines. When the rowers stopped rowing, the boat would slowly rise.”

Through the years, various concepts were tested like “pointy-ended vessels designed to be semi-submerged allowing it to sneak up and punch holes in enemy ships.” Other ancient designs included filling goat-skin bags with water to sink, then squeezing the water out again to rise.¹

Many designs were developed and tested over the years in an attempt to perfect the process to balance the science of weight versus displacement and create a nautical vessel that was fully functional and dependable.

The year was 1897, only one year before the Spanish American War. Oshkosh resident Richard Raddatz, a 26 year old graduate of the

Oshkosh Normal School, designed, invented, and built what was hailed at the time as the “World’s First Navigable Submarine.”

“Accounts describe him [Richard Raddatz] as a tall, spare young man. His appearance and bearing betokening that he has some object in life other than keeping himself well groomed.”³ Some say Raddatz’s motivation began at the young age of 11 when he heard about the French government offering a million dollars to anyone building a successful submarine. Other speculation hints he may have been inspired by the Jules Verne novel *20,000 Leagues Under the Sea* written 27 years earlier.³

As intriguing as Jules Verne’s undersea adventures were to an aspiring young entrepreneur, it was all just fantasy. Sub nautical navigation had not yet been functionally developed and it would be another three years before the US Navy would even have their first submarine.

As he began work to fulfill his dream, Raddatz was reticent and secretive about his project. Much of the work was performed in a barn or behind an eight foot fence. To build his vessel, Raddatz incorporated the assistance of August C. Schulz, a local cooper and lumber company operator. Schulz was a first generation German who founded the Oshkosh Cistern and Keg Company (1891), later known as the Oshkosh Tank and Lumber Company. The business was originally located in Oshkosh at 213 Sixth Street, later to be relocated to 428 Seventh Street around 1897. Schulz was a manufacturer of beer and wine barrels, brewery vats, cisterns and tanks.³

Schulz’s granddaughter, Charlotte Schulz Christen, says she was told by her father, Henry, that August sold barrels to bootleggers during Prohibition, a practice that caused him to be censured from the pulpit of his church by the parish priest. The family says that he stopped going to church after this happened and instead spent his Sunday mornings taking his dog for a walk and working in his shop. Son Henry Schulz told family members how he and his brother Herbert drove out in the country to deliver barrels, often down long, dark, winding roads. It was explained that bootleggers needed a lot of barrels because they burned them after each use to destroy potential evidence of their wrongdoing. Charlotte told me a story that her father shared with her a few years before his death. “My father, Henry, and his brother Herbert were on a delivery trip one day when they noticed a six-toed cat near a barn. Figuring their mother would like the cat, they swooped it up and took



August Schulz, seen here standing beside his wife Mary, was a cooper and a lumber company operator. He helped Raddatz design and build the submarine.

Photo credit: Charlotte Schulz Christen

The new vessel measured sixty-five feet in length and over four feet in diameter on the inside. Beginning sixteen feet from each end the submarine tapered sharply to a point, the thought being that a submarine could be used for ramming ships in wartime. Two conning towers eighteen inches in diameter projected above the water and at the rear a propeller. Below the propeller were rudders used for steering the craft. The estimated weight of the vessel was 35 tons.

During construction, lack of adequate funding caused Raddatz to look to the Oshkosh community for support. Support and financial assistance for his project came from a small group of Oshkosh residents which included William and Otto Konrad who backed the inventor "...to the extent of \$3,000".² The 1895 Bunn's Winnebago County Directory lists William Konrad's occupation as *"Furniture and undertaking. Upholstering and picture framing. A large and fine line of furniture. Doing business at 33 Main Street in Oshkosh"*. The venture began

it home to her." Charlotte mused on what the mother actually thought of this whole event and imagined she had a few choice words for her sons. She also wondered how they got close enough to notice the cat had six toes!

Raddatz's first design proved unsuccessful as the original prototype built in 1894 included a hull designed by August Schulz that was built from wood. The problem with the design was it didn't sink...it floated instead. That drove the young inventor back to the drawing board where he began to create a model fabricated from metal. The cigar-shaped, hollow metal cylinder resembled more than anything else, a locomotive boiler, except it was pointed on both ends.³

in a barn owned by the Konrads. William's son Charles, then 16 years of age, became Raddatz's eager and willing helper.² Charles became close with Raddatz and accompanied him each step of the way.

Oshkosh resident, and Konrad descendant, Gary Konrad remembers his grandfather George Konrad describing what he remembered as a child. "My grandfather claimed construction of the sub occurred in the rafters of the Konrad barn which was located on what we know today as Bay Shore Drive, where the former DNR building now stands. At one point when they were ready, they built skids out of beams and slid the sub down to the river's edge." The sub was kept out of sight in a boat house there, where preliminary water testing was done. An eight-foot wooden fence was also erected to protect the privacy of the project while in dry-dock.

On June 26, 1897, Raddatz's submarine was ready for its first test launch. The launch was scheduled to take place in the Fox River. Before the launch, scores of people and even newspaper reporters who "caught wind" of the proposed launch, gathered along the river banks in curiosity. Raddatz told a reporter "This is only an experiment. Successful, I hope, and I do not want to talk too much about it at this stake." Besieged by the press for mechanical explanations, Raddatz said, "By her machinery she can be sunk to any depth and maintained at any depth either in motion or at rest. She is supplied with air and in case of an accident be returned to the surface immediately. One man can operate her by means of levers and buttons in the cabin. A dozen men could be crowded into her." ²

The operating system of the newfangled vessel was described in an article published by Oshkosh's *The Paper* on December 19, 1968. "Downward movement...was attained by taking in water into two hot water tanks of the variety that are used for bathroom purposes. The vessel was brought to the surface by forcing water out of her tanks by means of a large bicycle foot pump." Not really state of the art technology, but certainly functional.

Details of the launch are recorded in a report written in 1933 by Charles "CC" Konrad, who accompanied Raddatz on the maiden voyage. Konrad writes, "Try, if you can, to visualize yourself in a country where automobiles are unknown, airplanes a dream and surface boats are still slow and unwieldy. Such was the situation in 1897. And with that background in mind, can you not feel the excitement that was



One of the few photos known to exist of the Raddatz submarine. Although he never patented the design, Raddatz was very secretive about his project, hiding his work in a barn, a boathouse, or behind an eight foot fence. Circa 1897.

Photo Courtesy of Ed Tiedje

caused by our daring experiment to penetrate a region still unexplored.” Konrad acknowledges the privilege and good fortune to be closely associated with Richard Raddatz and to accompany him on many trips beneath the water.

On the day of the launch, Konrad recalls, “A number of people had discovered when the boat was to be launched and this group congregated at the river bank as preparations were made for a test. Everyone watched wonderingly, and with a tremor of excitement, the long black, low lying craft floating in the river current. This mysterious looking vessel, one of the world’s first practical submarines, was a strange sight in those days, especially in an inland city.”

Konrad went on to describe the feeling as he and Raddatz boarded the submarine. As he scanned the crowd he could see the excitement and anxiety in their eyes. “...Mr. Raddatz and I climbed down into the dark depths of the boat through the funnel shaped conning tower. Just before closing the cover on the tower the inventor called to the assembled group, ‘We are going to submerge and lie on the river bottom for fifteen minutes.’”

Edward F. Kennedy, reporter for *The New York World* accompanied Raddatz and Konrad on the historic launch. His account of the epic event was published in *The Daily Northwestern* on July 3, 1887 in a story titled “Jules Verne in Oshkosh”:

The crowd watched as the boat submerged as predicted. Observers held their breath with anticipation and fear. As minutes passed, not even a ripple was seen on the water. After ten minutes the crowd began to grow restless. At the fifteen minute mark, there was no sign of the submarine surfacing as Raddatz had indicated earlier. Anxiety turned into deep concern. After twenty-five minutes the crowd was certain disaster had struck. Some shouted, ‘Call the fire department!’ while others were ready to organize a dredging operation.

Suddenly, the large black snout, like that of a huge alligator, broke the water surface. In a moment the conning towers appeared, and soon after the sub was sitting safely dockside. The lid on the conning tower opened and the men emerged, apparently none the worse for their experience. Cheers, elation and shouts of relief came from the crowd. The first trial was deemed a success.

Passenger/reporter Edward Kennedy described the experience from his perspective. “The descent was really a voyage. The boat traversed a distance of half a mile and remained stationary several minutes in the draw of the Chicago and Northwestern railroad bridge. This was done to test its machinery, as the current is very swift, and Mr. Raddatz desired to prove that the boat could be held stationary in a rapid current...While thus anchored a river steamer passed through the draw. She could be seen distinctly.” Kennedy revealed his anxiety as he boarded the boat. “I must confess that it was not without misgivings that I stepped within what looked like a floating coffin, and the sensations of that voyage I will never forget. After the party became seated the manhead was closed down and secured, shutting out all sounds from outside except a vague murmur which it was hard to believe, was all that could be heard of the shouts of the spectators on the bank. Immediately on discovering that I was hermetically sealed within the iron vessel the fear arose that the air supply being completely shut off there would be difficulty in breathing, if not actual suffocation...”.

Modifications by the inventor continued to improve the functionality of the submarine. A contraption was designed using the gears from a bicycle to which they attached the shafting and propeller. The propeller was put into motion by the same action one uses to ride a bicycle.

Over the coming months, Konrad and Raddatz performed many underwater trips and had some interesting stories to share. Konrad writes,

*While navigating near the bottom of the river we rammed one of the piers of the Northwestern railway bridge. These piers were constructed in a manner with various piles being driven in the bottom of the river forming a cluster and separating at the bottom something like a foot or more from each other. Into these we had become wedged tightly. We tried to come up but the gauge would not show any rise and we knew we were stuck fast. Our pointed end had certainly demonstrated its ability to ram whatever got in its way, but with results entirely unexpected and overlooked by the inventor. Surely the ramming of a ship would have entailed greater consequences. I made the remark to our inventor, Mr. Raddatz, 'How are we going to get back to the surface?' He made a peculiar remark, even to himself, when he stretched out his arm and rested his chin on his hand, and said, 'What a piece of paper might have been but isn't.' This was so ridiculous sounding to me that I laughed out right at him but exclaimed 'Dick, this is no time for idle talk, we have to get out of this because the air is getting heavy.' He asked 'What should we do Charlie?' I replied, 'Do what I tell you and when I say **RIGHT** I will propel forward and you turn the rudder left and when I say **LEFT** I will propel backward and you turn the rudder to the right and in that way we will wiggle ourselves out.*

After a few attempts, Konrad's plan succeeded and the sub worked itself free of the pilings.

Another mishap occurred as Raddatz himself described in a *Milwaukee Sentinel* article (date unknown) kept in the Oshkosh Public Museum files. "I had one experience with my first boat that I shall never forget. It was provided with large windows, filled in with heavy plate glass. One day in navigating the bottom of the Fox River, the boat ran into some piling and broke in one of the windows. The water rolled

in upon us by the barrel full, but I managed to pull the lever and we shot up to the surface so quickly the boat almost jumped out of the water. Fortunately the broken window was above the water line when we were on the surface.”

During their underwater voyages, Raddatz would marvel at seeing fish in their natural environment and the vegetation that thrived on the river bottom. The August 14, 1898 edition of *The Sunday Chronicle*, a Chicago newspaper, reported on one such occasion. Raddatz agreed to take a reporter along for the ride, this time on Lake Michigan. The apprehensive reporter reluctantly agreed and climbed into the iron tube. The sub was cruising just five feet below the surface when Raddatz urged the reporter to look through the tiny peepholes designed to see outside the vessel. Schools of perch and herring were attracted by the appearance of the strange visitor. Small minnows, curious and inquisitive, came up to the small holes to investigate. Suddenly Raddatz exclaimed “Holy smoke!” The anxious reporter cried out “What’s the matter??!!” as he bumped his head against the top of the iron boat. Raddatz explained “Say, you should’ve seen that fish! ‘Twas bigger than a whale!”

By the end of the season, more money was needed to keep the project going. Raddatz needed to continue improvements and had dreams of building another submarine. The Konrads could no longer agree to finance him, so the submarine was sold to a Milwaukee resident named Mr. Lyendecker, who continued to experiment with the inventor. In the coming years, Raddatz would relocate from Oshkosh to Milwaukee where he would build two more submarines. He never patented his original design as he felt there was more value in selling the “secrets” of his design along with the submarine to potential buyers like a foreign government.

The work eventually expanded to Philadelphia where experiments were done with the famous John P. Holland who launched a successful submarine about a year later.

Newspaper articles reporting the final resting place for the Raddatz submarine vary, but all agree it was near Milwaukee on Jones Island where the iron-clad boat was put into dry-dock. Some reports conjectured that it is there where the sub was abandoned and eventually rusted away, while others claim it was cut up and sold as scrap metal. Efforts to locate the boat in recent years have been unsuccessful.

According to his own records, Raddatz claimed to have made over three-hundred trips with his invention. Blueprints of the Raddatz Submarine can be found today, nestled in the archives of the Oshkosh Public Museum.

In 1898, Richard Raddatz married his wife, Anna, in Milwaukee where he worked for E.P. Ellis and Allis Chalmers until around 1921. Together they had two children, Ronald and Anna.

Inventor Richard Raddatz died in Milwaukee in 1933. Builder August C. Schultz died in his Oshkosh home in January of that same year.

Sources: (1) <http://www.submarine-history.com/NOVAone.htm#1623>; (2) Appleton Post Crescent, October 15, 1967; (3) *Oshkosh Daily Northwestern*, May 26-27, 1979; (4) CC Konrad Program to Winnebago County Arch. & Hist. Soc., Nov. 14, 1933 on file Oshkosh Public Museum; (5) Boston Sunday Post 1898 article written by Louis V. DeFoe; (6) *Oshkosh Daily Northwestern*, April 14, 1898; (7) Oshkosh Public Library report written by Adam Kohler, Nov. 2014