

# THE FIRST CENTURY

## WIRELESS AND AMATEUR RADIO HISTORY

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### Epilogue – Wireless Bridges the Atlantic

Signor Guglielmo Marconi, the eminent inventor, was instrumental in first introducing wireless from Europe to North America at the beginning of the 20th century. The author's article "Origination—Wireless Comes to America," which appeared in the Autumn 2019 *AWA Journal*, relates the progression of this accomplishment. This sequel details some unique aspects of the saga.

The radio station of which we speak no longer exists and very little evidence remains of its prowess. However, considerable history exists of this facility, which participated in the most significant wireless event of the early 20th century and convinced the world of the value of wireless.

As the 20th century dawned, The Marconi Wireless Telegraph Company of America (known as American Marconi) proceeded with the next major step in the creation of the transatlantic leg of the Company-envisioned global wireless network.

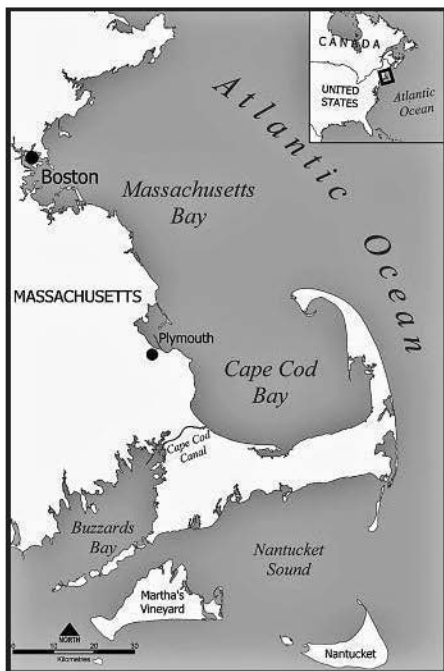


*Publicity photo of Guglielmo Marconi posing with his early radio apparatus. Spark transmitter is on left, coherer receiver on right.*

The small initial stations in the United States were to be augmented by a major transoceanic station on the East coast. It would complete a triangle with the existing station at Poldhu, England and another new installation at Glace Bay, Breton Island, Nova Scotia.

The Cape Cod peninsula in the state of Massachusetts was an excellent site for the location of this new complex. The ocean bluffs near the town of South Wellfleet offered an unobstructed oceanic sweep to the east—a direct path to Europe and to the mariners on the Atlantic and its fringes.

The Atlantic side of the hook-shaped Cape's north-south elbow was comprised

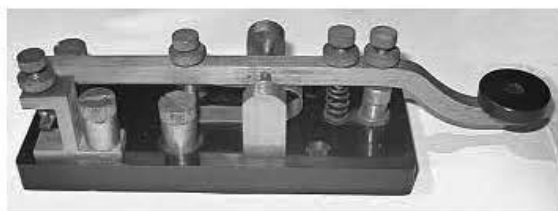


*Cape Cod map.*

of sand cliffs of varying heights running for about 40 miles. Midway, a path from town, (that would come to be known as "Wireless Road," cleaved the dunes, giving way to a flat plateau about 200 feet from the cliff edge and about 40 feet above the sea. \$240 purchased eight acres of the plateau. It was here that the station buildings and antennas were to be located.

Materials for construction of the station arrived at the town of Wellfleet's docks and railroad station. Transport to the site was achieved over a town road connecting to a sand trail between the dunes. The loads were borne by horse-drawn wagons. Horses also were used to power construction lifting devices and tools. With use, the sand trail was widened and gravel was added.

The essence of the station was contained in three buildings, the power house, the transmitter house, and the headquarters building. Foundations for these buildings and for the individual pieces of heavy apparatus within were cast from poured con-



*Marconi spark gap key note the large contacts.*

crete. As technology advanced beyond 1902 the apparatus contained in the first two buildings changed only modestly.

The initial wireless apparatus was elementary, and so it remained. Power was generated by a 100 HP kerosene fueled engine belted to a 50 kilowatt, 60 cycle generator, which in turn energized a 50 kilowatt, non-synchronous spark. As technology sped forward to the vacuum tube and transmission of continuous wave (CW) signals, CC/MCC (and the first WCC) continued to keep the airwaves alive with the unique buzz of its spark signals at 200 kilocycles or 1500 meters.

The initial installation was spectacular. Masts supported an array of wire shaped as

an inverted cone terminating at the top of the transmitter building. Twenty masts, each 200 feet high, were situated in a 200-foot circle. Each mast consisted of three sections spliced together in military style. Each mast was set in concrete and was guyed both to the ground and to the other masts, creating an enormous maze.

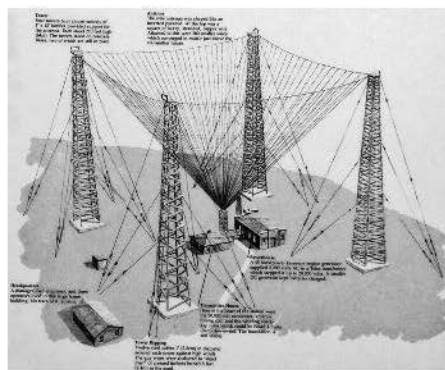
The world was experiencing the transition from sail to mechanically powered marine propulsion. The station constructors had the good fortune to find local sailors who were adept at the intricacies of sailing ship rigging to string this elaborate arrangement. However, a difference of opinion arose between the riggers and the designers. The design engineers specified that the masts be guyed one to another. The sailors recommended that the masts each be guyed independently. The engineers prevailed and the entire structure collapsed upon itself in an early gale before the station was operational. The designing of a replacement antenna support system delayed the project but

resulted in a superior, enduring system duplicated at other installations. Ironically, an identical mast arrangement at Poldhu had been leveled by a gale several weeks earlier.

Four towers were set in place, one at each corner of a 200 foot square backing on the cliff edge.

Each tower was composed of wooden components bolted together to form a square structure 210 feet high, tapering from 20 feet wide at the base to eight feet at the top. The towers were embedded in concrete and the marine riggers ran a system of steel guy wires featuring the new concepts of isolation sections and strain insulators. At the time, it obviously was of no great concern to the engineers that the base of the farthest tower was a mere 165 feet from the cliff edge.

The four towers of the first Marconi Transatlantic Wireless station, painted red, were clearly visible for quite a distance above the flat terrain of Cape Cod. The locals called the site "Marconi Towers," although to the wireless world it was known



*U.S. Park Service rendition of the station.*

initially by its call letters as CC, later MCC, and finally WCC. The towers afforded the opportunity to experiment with various antenna configurations. Radiomen were becoming aware of the characteristics of horizontal versus vertical wave polarization, and directivity. The final set up at CC was an omni-directional "Z" design. This was consistent with the evolved principal mission of the station—service as a wide-range press broadcaster.

From its inception in 1902 the station's signals were received well, both over the Atlantic and in Europe. In February of 1903, American Marconi announced the occurrence of a momentous event—likely the most significant of the decade. Messages had been exchanged between CC and the sister station at Poldhu. This mistakenly became identified as Marconi's first *wireless* crossing of the Atlantic.

Although engaged in handling ship-to-shore traffic, the station emerged primarily as a press broadcaster. Daily content was received by direct telegraph from the *New York Times*, in New York City and punched into transmission tape. The news was then broadcast on schedule, at the same time every evening, to those listeners utilizing receivers leased from the Marconi Company. Schedules were likewise maintained for the reception of westbound press from the *London Times*. The station was in

service for more than 15 years.

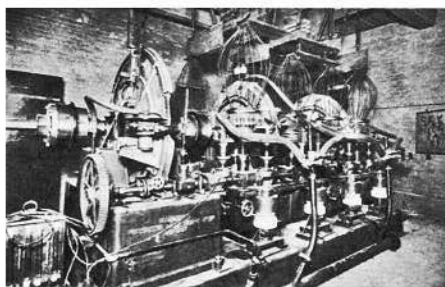
The progress of this endeavor was followed by the periodic vacationers to the area and of course, the operators. Some aspects of their observations have survived. Of particular interest are the contemporary accounts of Frederick Parsons who recalled the site before the station was created and the *QST* journal articles of Irving Verinilya, W1ZE. Irving was the last manager of the station before moving on to the succeeding



*WCC—Receiving antennas at Chatham.*



*WCC—Transmitting antennas at Chatham.*



*WCC—"Timed Spark" transmitter at Chatham.*

WCC site nearby at Chatham and Marion, Massachusetts at the elbow of the Cape. The transmitting and receiving facilities were located separately, at distant locations, to permit "duplex" operation—unobstructed simultaneous operations.

Irving was a legendary pioneer Amateur Radio operator known as "VN" in the early days of spark, and was the first licensed Amateur operator in the United States. As a professional he was the last of the managers



Irving Vermilya QSL card.

of "Olde WCC," managed the succeeding RCA WCC complex at Chatham, and had a successful career in commercial broadcast.

Accounts describe the operation of the station as a spectacle. Irving describes it as follows in the February 1942 *QST* article, "Wireless Cape Cod":

*We ran 30 kilowatts on that old spark, and the noise from the old gap was terrific. The flashes from the spark were blinding. We worked in a sound proof room. The flash from the spark could be heard and seen a mile or more from the building. The radiation from 'that baby' was 50 amperes to the antenna. Everything that was loose was throbbing with the code.*

Indeed, a "sound proof room" was built on one side of the transmitter building to isolate the operators. It had a door with a glass pane to observe the spark and housed the receiving apparatus and switching devices. The pump handle of the key

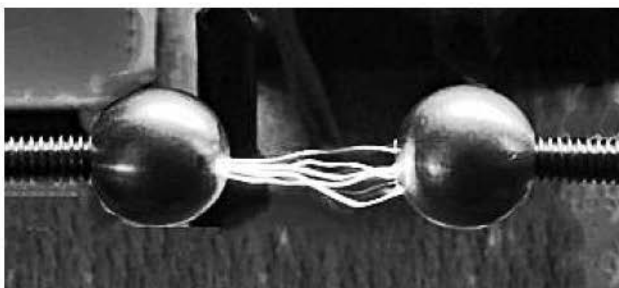
protruded into the space, permitting the operator to interrupt the secondary of the keying relay. The operator's stool was insulated. Most traffic was sent on perforated tape, however the shore-to-ship traffic was manually keyed at a limited 16 words per minute. The "normal" speed was 30 words per minute.

The station operations began at early evening, every hour, for 45-minute intervals with the 15-minute interval for cooling!

This is how Irving described the demise of CC in the February 1920 *QST*, "The Passing of Old WCC":

*None other than the U.S. Navy acquired the station from Marconi and instead of using it, they entirely dismantled it. Yes, right to the ground...all that remains are the buildings. Every article was positively taken out and junked. The engines, generators, batteries, d.c. machines, lathe, transformers, etc.—even the door knobs taken off and the water pipes pulled up out of the ground. The towers are all down—given away for the wood to the men that took them down.*

Except for sporadic wartime military training activity or the passing of the occasional hiker the site remained dormant in the grasp of nature as the wind and surf sculptured the cliffs. Historians and wireless enthusiasts however, recognized the significance of the location. In 1953, a bronze plaque was placed at the site. Control of the site reverted the National Park Service, and by 1974 an exhibit shelter was erected containing a scale model of the station and a recently created bronze bust of Marconi. But, nature's relentless action continued and on



Spark is King!

July 23, 2013 the shelter was removed before it fell over the eroding cliff. The contents were moved to the nearby Park Headquarters building.

My recent inquiries produced this response from the National Park Service staff at the site:

*Most of the remains of the station are gone. Remnants of foundations are likely still under the sand or have already eroded out of the bluff—half of the original site is now eroded away by the ocean.*

*2 of the 4 tower concrete bases can occasionally be seen at very low tide on the beach at the waterline. The other 2 tower bases still on dry land on top of the bluff are buried by sand. A few small bits of tower support structures are around on the site for display purposes.*

*There are a handful of items at park Headquarters on display, and there are a few Marconi related items on display at Salt Pond Visitor Center. There are no additional plans to display anything else at this point.*

*The park does periodic talks at the site, and we offer a 12-minute movie, etc. ... We also host an annual Marconi Day with ham operators communicating from the site all over the world in January to commemorate the 1903 over-seas transmission.*

The work of Frederick A. Parsons speaks for itself. Originally licensed as 2ABM, Fred also managed the South Wellfleet station from 1912 to approximately 1918 and went on to manage the WCC transmitting facility at Marion, Massachusetts. In addition to his writing he built the model of the CC station which was the centerpiece of the pavilion-protected display on the site sand cliffs.

Fred's book, *Wireless Road*, is an account of the station site and environs before and after demolition. Never published, the original typewritten manuscript has been preserved in the ARRL Heritage Museum, Vintage Book Library. This book along with Parsons' survey of early wireless towers, *Tall Towers* is available electronically by request to the ARRL Historian.



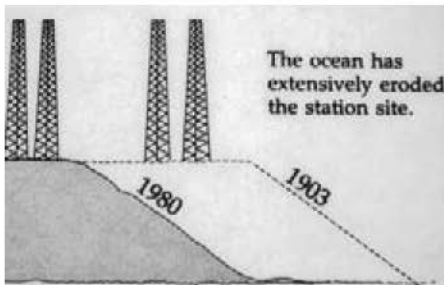
*Pavilion before removal, tower remnants in foreground.*



*Frederick A. Parsons QSL card.*

Both Irving and Fred were early amateur radio licensees who appeared in circa-1910 listings and directories. Irving claimed to be the first one licensed based on his testing date. They both lived history and made the history of wireless in the United States.

Nature reigns and the wind and sea prevail but the memory of Marconi lives. And, so it is with the most historic wireless memorial on the continent!



*Cliff erosion has claimed the Marconi Site.*