MARCONI

"Entrusted to Space"

This is the story of Guglielmo Marconi and his South Wellfleet Wireless Telegraph Station which was built on Cape Cod in 1901.

Historic slides and text organized by Frank Caswell, W1ALT,
Adapted by Barbara Dougan, N1NS, KM1CC trustee 2003-2019, 2020-

Marconi

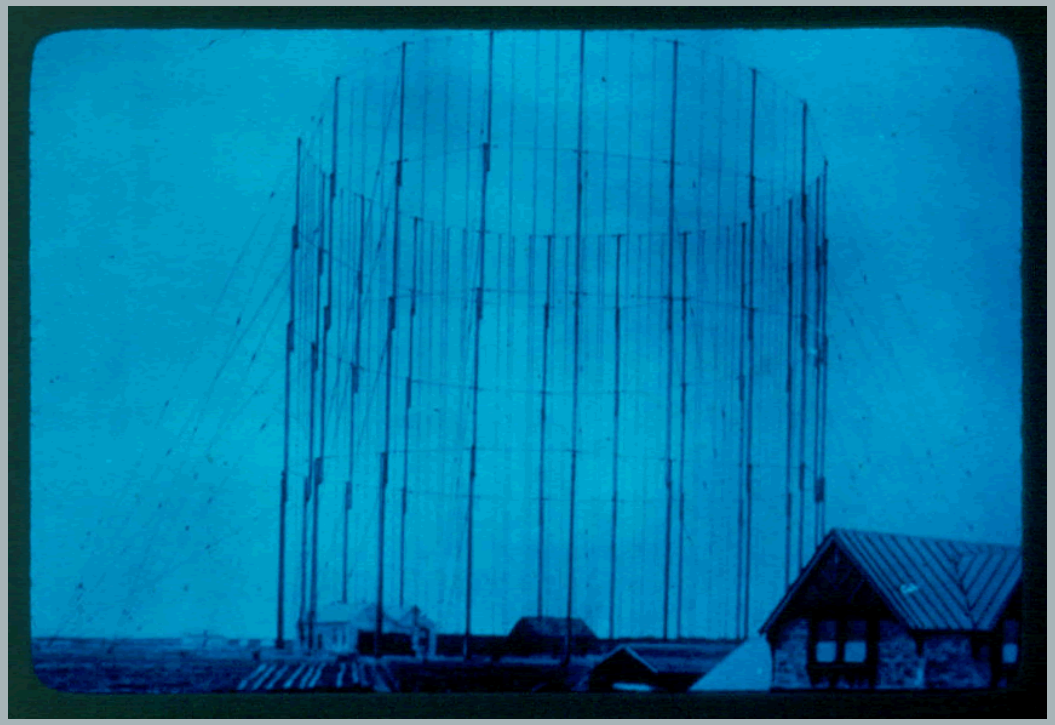
As a teenager, he built his own apparatus in his attic and transmitted to his father's garden. There he first discovered that by adding a ground to the system, he could double his distance. At the age of 20, he transmitted a signal one mile and became famous overnight.

When Guglielmo Marconi was 22 years old, he went to England to demonstrate his apparatus and to enlist the aid of the British government after being turned down by the Italian authorities.

While in England, he transmitted from a lighthouse to a ship across the English Channel and soon increased his distance several hundred miles to a British warship at sea.

After Ship to shore and ship to ship wireless were successful then…

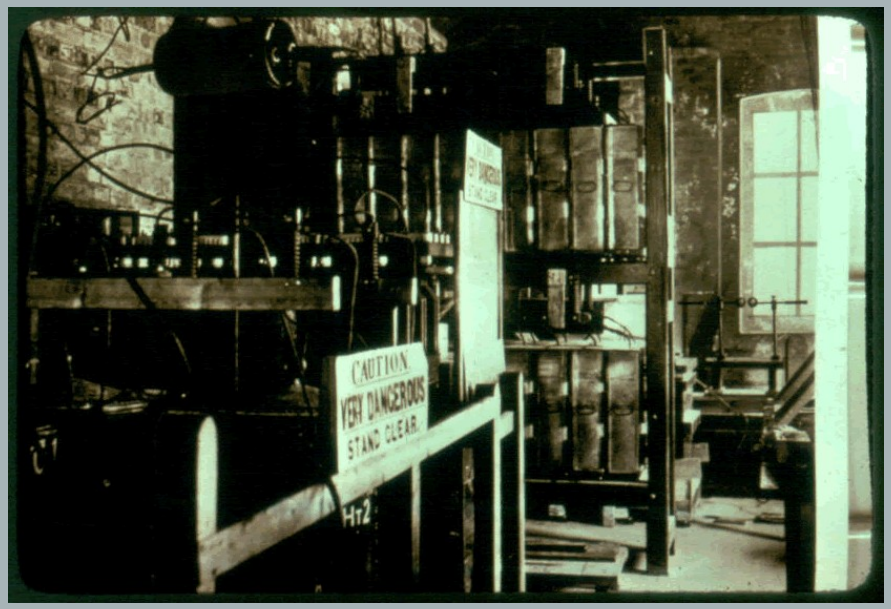
Circular Towers



...Marconi turned to the Atlantic. In England he constructed an aerial installation at Poldhu on the southwest coast of Cornwall. The aerial consisted of 20 ship's masts 200 feet high, arranged in a circle.

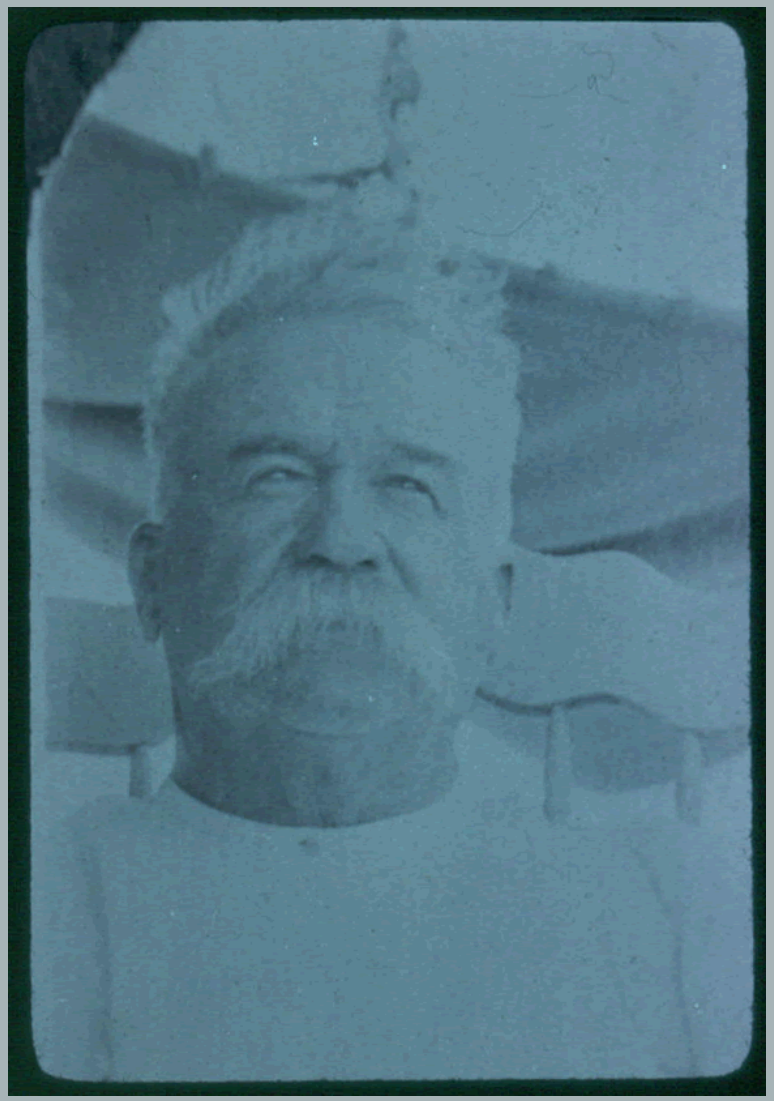
The circle was 200 feet in diameter and strung with wires from the top of the masts diagonally to the center at the bottom. With this arrangement, he hoped to transmit his signal across the Atlantic.

Transmitter Room-Poldhu



Before the Poldhu transmitter could be used, it had to be tested. Note the transmitter spark gap near the window and the backup condensers in the rack. High voltage had never been handled in this manner before. Some problems included: the heating of the spark gap electrodes and breakdown of the condensers. Only a few letters could be sent before the apparatus had to be shut down for cooling. The transmitter was experimental and dangerous, especially where wood was used as an insulator.

Edward Cook



On the American side, our story now turns to Cape Codder Edward P. Cook, shown here at the age of 85 in 1925. Marconi came by boat to Provincetown in 1901 where he met Cook and they became close friends. Cook helped build the wireless station, and 20 years later, supervised the destruction of the towers.

Highland Light

Cook drove Marconi around Cape Cod and Highland Light was Marconi's choice for the location of the station. But when the natives found out what he was up to, they refused to sell him any land. He finally purchased the sand dunes in South Wellfleet from Cook himself for $250. for eight acres.

Towers

Construction started in May 1901.

During the Summer of 1901, the circular arrangement of ship's masts for the antenna duplicated the Poldhu installation.

When Cape Codders learned that ship's masts were being planted in the sand dunes, they flocked there in great numbers. The installation had to be fenced off with barbed wire. They said the masts would come down in the first "Nor'easter."

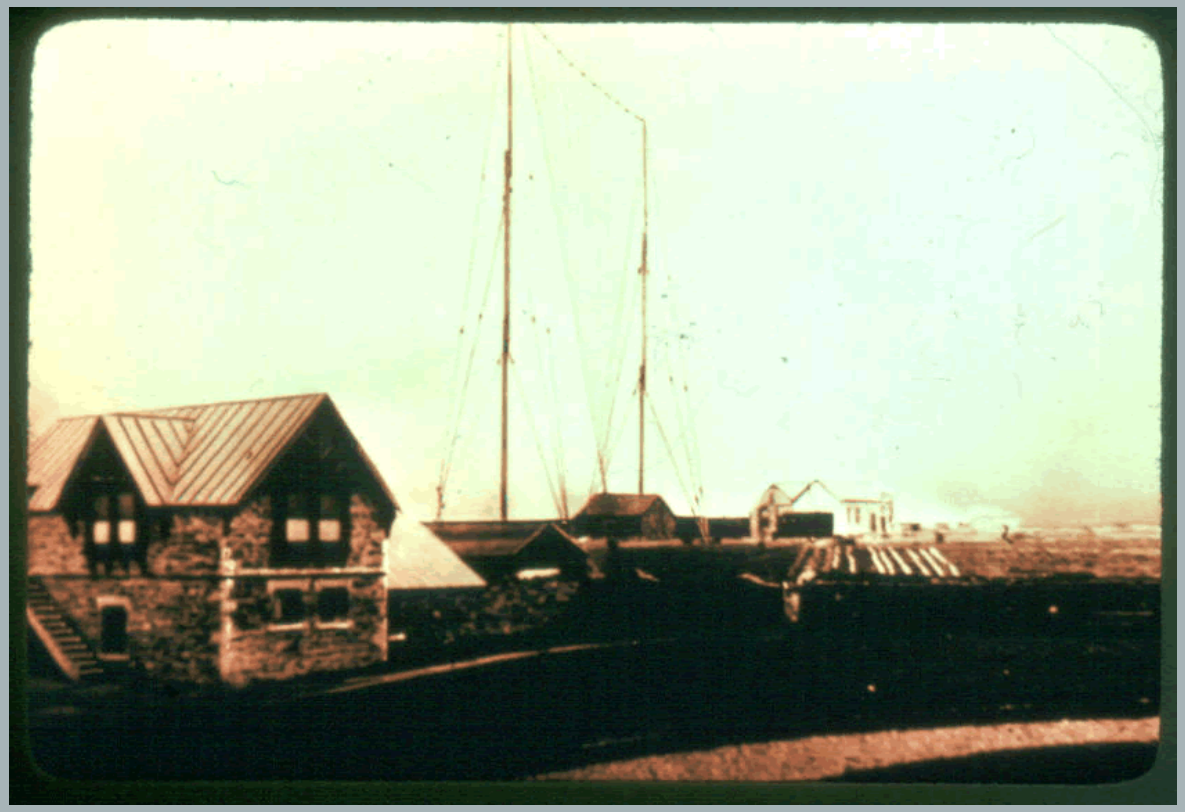
Transmitter Buildings

A close-up of the installation reveals the building, most construction, and guys. On the left is the transmitter house built of wood and shingled. On the right is the redbrick power house.

Poldhu Masts Down

In September 1901, a gale blew down the Poldhu masts. They were guyed literally one to another; and when one weakened, they all came down. **In November 1901, the Cape Cod masts came down in a "Nor'easter" - as predicted by the natives.**

Poldhu Aerial

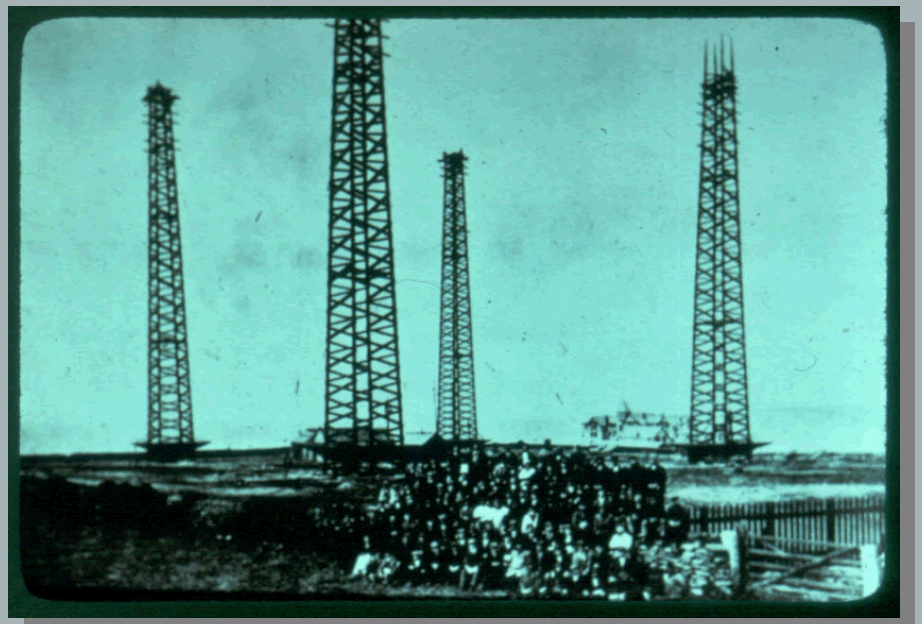


An aerial was hastily erected in Poldhu from some of the remaining spars: This is the antenna which radiated the letter "S", toward the Americas, the first trans-Atlantic transmission. It is interesting to note that this antenna was later found to be more efficient than the original circular arrangement. It must also be remembered there was no antenna technology in the 1900's.

Kite Flying

Another contemporary photograph captures these men in the process of raising of the kite aerial at St. Johns: Marconi and Kemp were successful in hearing the letter "s" transmission from across the Atlantic at Poldhu on December 12, 1901. (heard the signal multiple times on

Four Towers

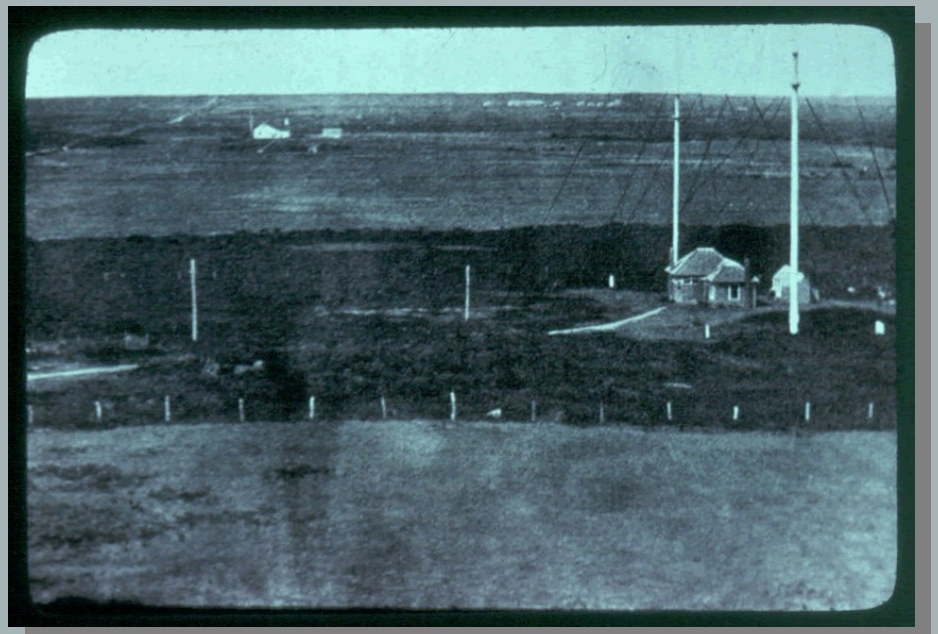


As soon as possible replacement towers were built at Poldhu, England: Marconi ordered these towers built both at Poldhu and Cape Cod to replace the ship's masts. Four towers were erected in a 200-foot square pattern. Each tower was 210 feet high, 24 feet square at the base, 8 feet square at the top. They were built of 3 by 12 inch timbers for the lattice and 12 by l2-inch timbers for the corner posts. There were 12 steel-cable guys per tower, terminating in "deadmen" made of crossed 12 by l2-inch timbers, 10 feet long and buried 10 feet in the sand. The cement bases for the towers were each 30 feet square and 4 feet thick.

Towers

The new Poldhu towers were complete. A similar set of towers were built for a Marconi wireless station on "offered" land at Glace Bay, Nova Scotia.

Nantucket Station



But before our story continues, a word about the low-powered wireless station at Sciasconsett, Nantucket should be mentioned. Interestingly, the South Wellfleet operation was not the first Marconi wireless station in the United States. This low-powered installation was erected in Nantucket in 1901 and another installed on the Nantucket lightship by the New York Herald to receive ship arrivals one day earlier than the other New York newspapers. David Sarnoff was the operator here. Sarnoff went on to become another significant figure in wireless history on his own.

Wireless Road

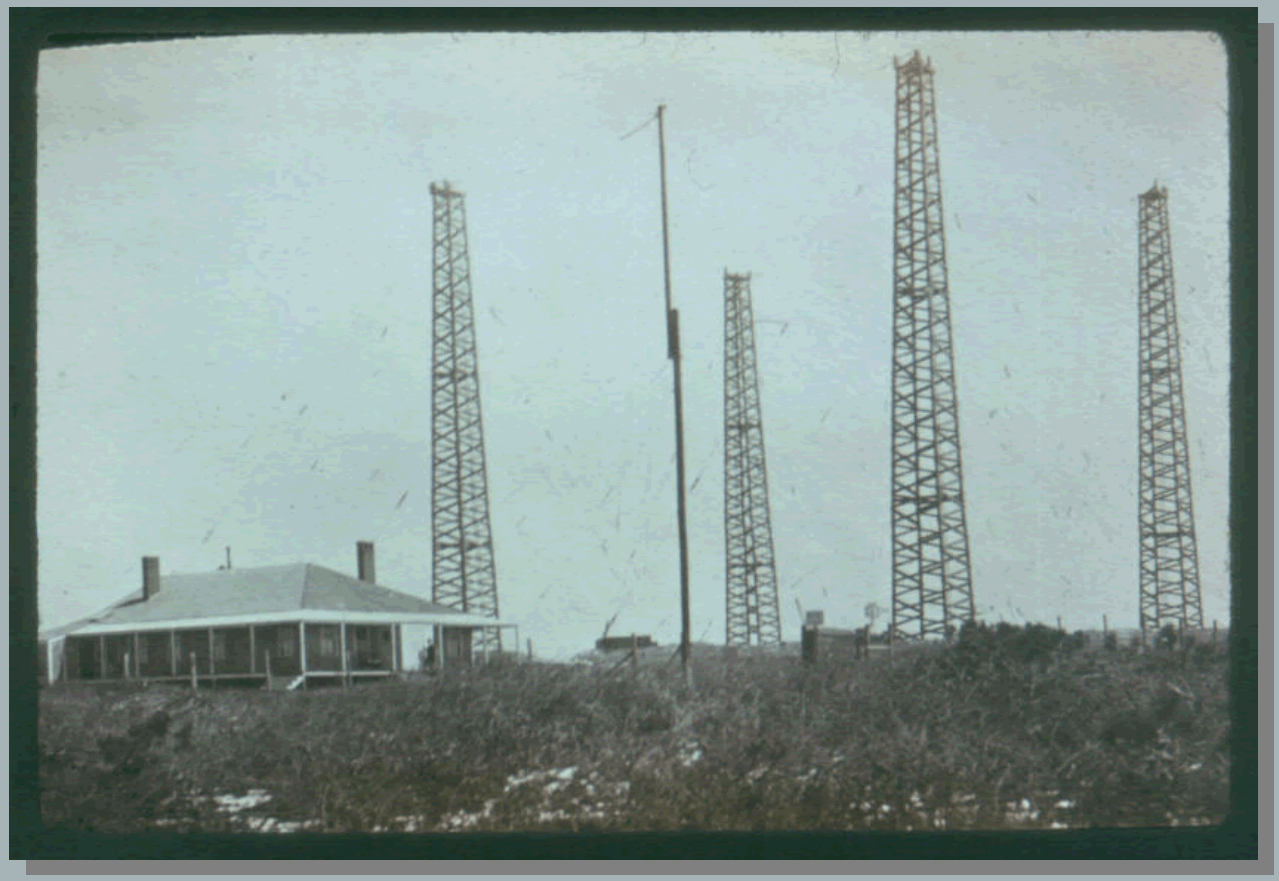
Our Transatlantic story continues, with more about the installation of the South Wellfleet Wireless Station.

A view of Wireless Road off of LeCount Hollow Road serves as a good starting point.

Horse & Cart

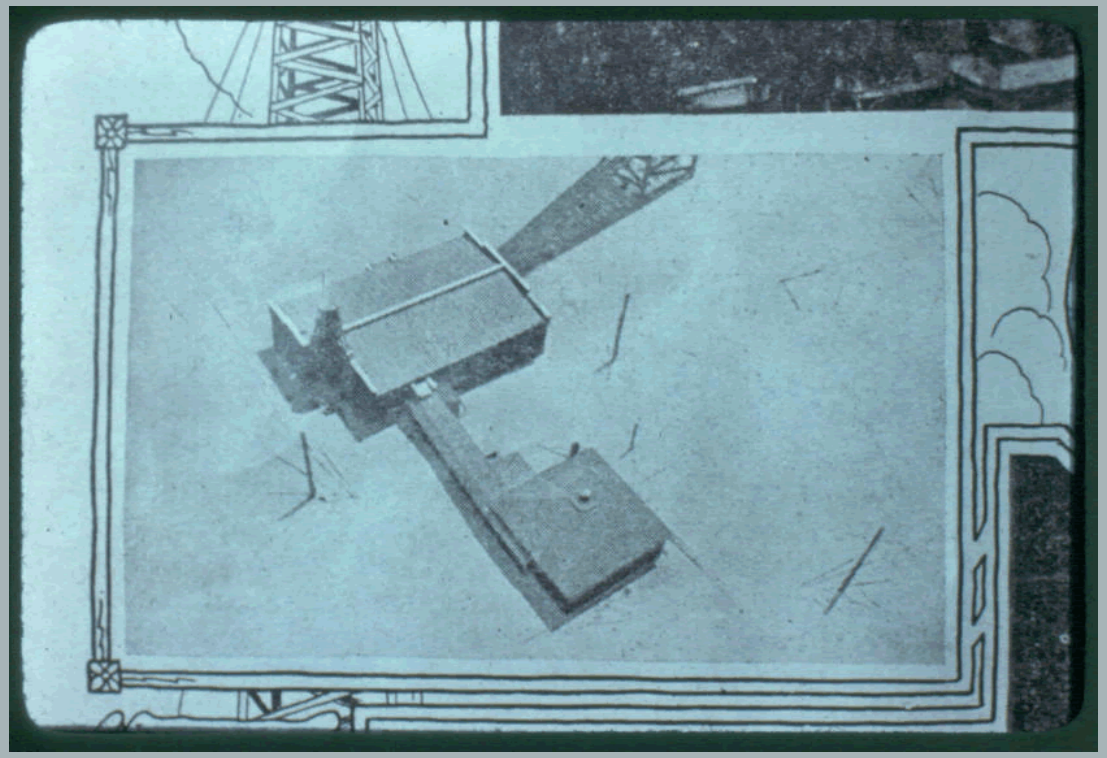
An early photographer witnessed this scene of lugging heavy equipment over the ocean end of Wireless Road: It was rough going.

Station & Towers



The new South Wellfleet Wireless Station towers loomed over the horizon, contrasting with the remaining ship's masts which were later used for a low-power transmitter. The bungalow at the left was for housing the personnel.

Poster with Towers

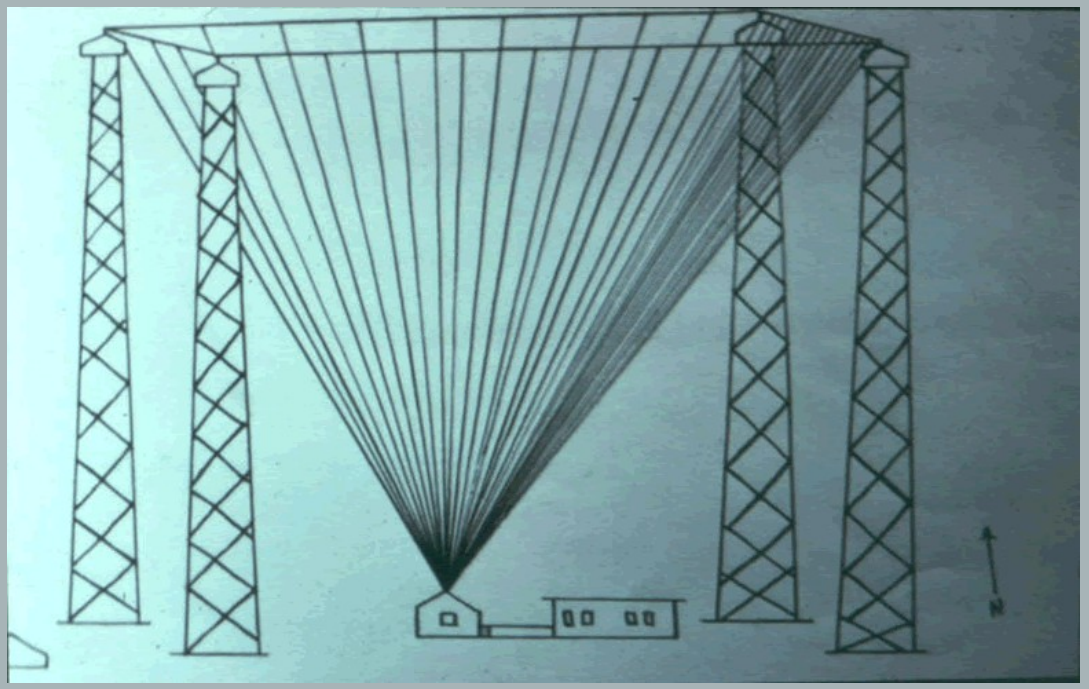


An old commemorative poster photo shows the view from the top of one of the towers: Note the poles that supported the lower end of the converging wires of the antenna.

Towers in Distance

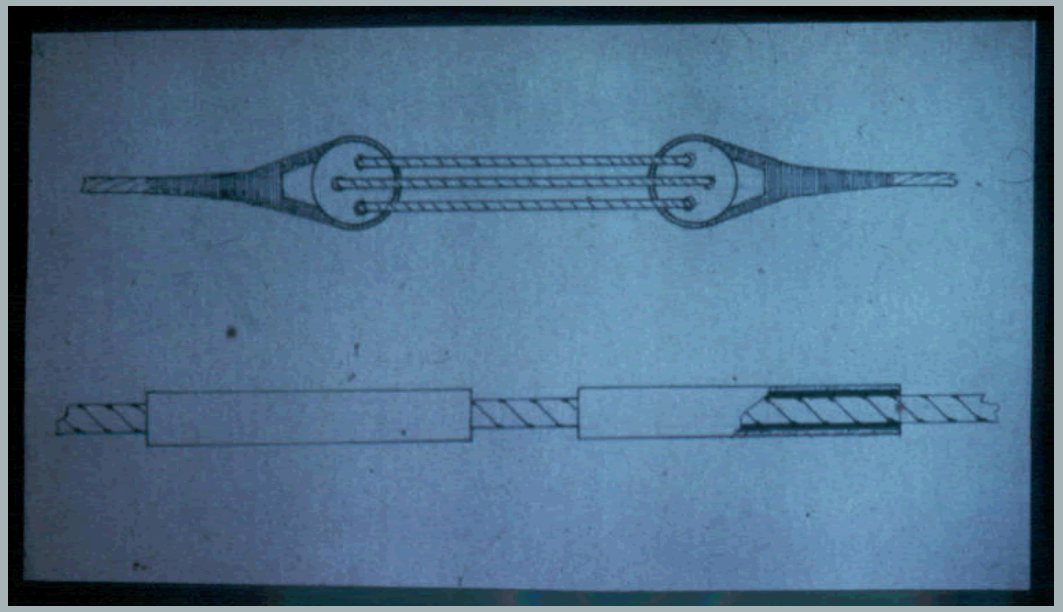
The towers were plainly visible in this view from Blackfish Creek on the bayside across the Cape from the station. Note the lack of trees present today.

Diagram



A simplified graphic diagram of the aerial originally installed on the towers, shows the approximately 200 converging wires.

Deadeyes

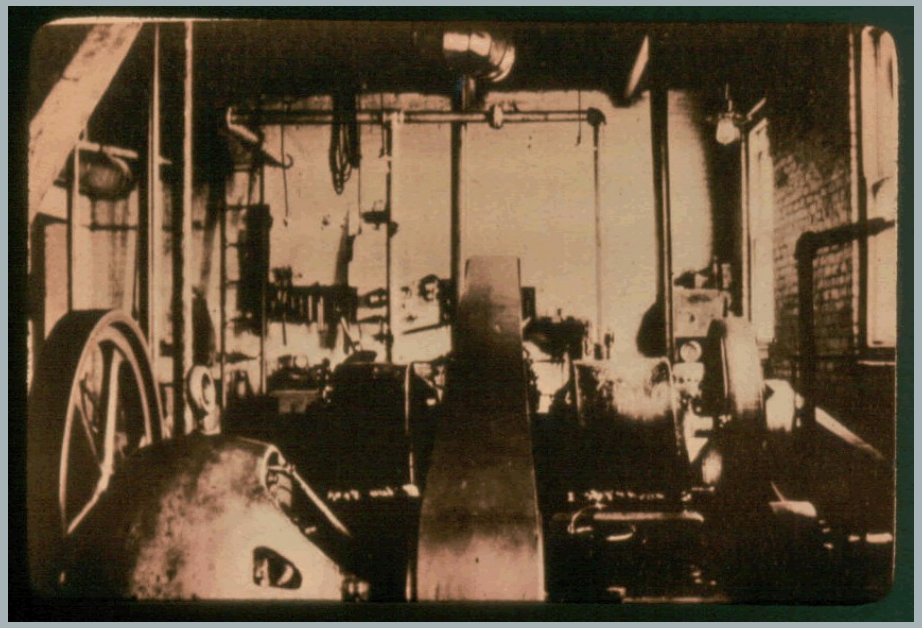


Another device used in constructing the antenna were ship's deadeye's: These were used for tightening the guys and insulators; made from 2-inch manila rope, rubber hose, and melted sulfur.

Carl Taylor

Carl Taylor, an English electrical engineer was brought over by Marconi. He built the wireless equipment inside the station, and traveled the world building Marconi equipment. Upon his retirement, he returned to Wellfleet.

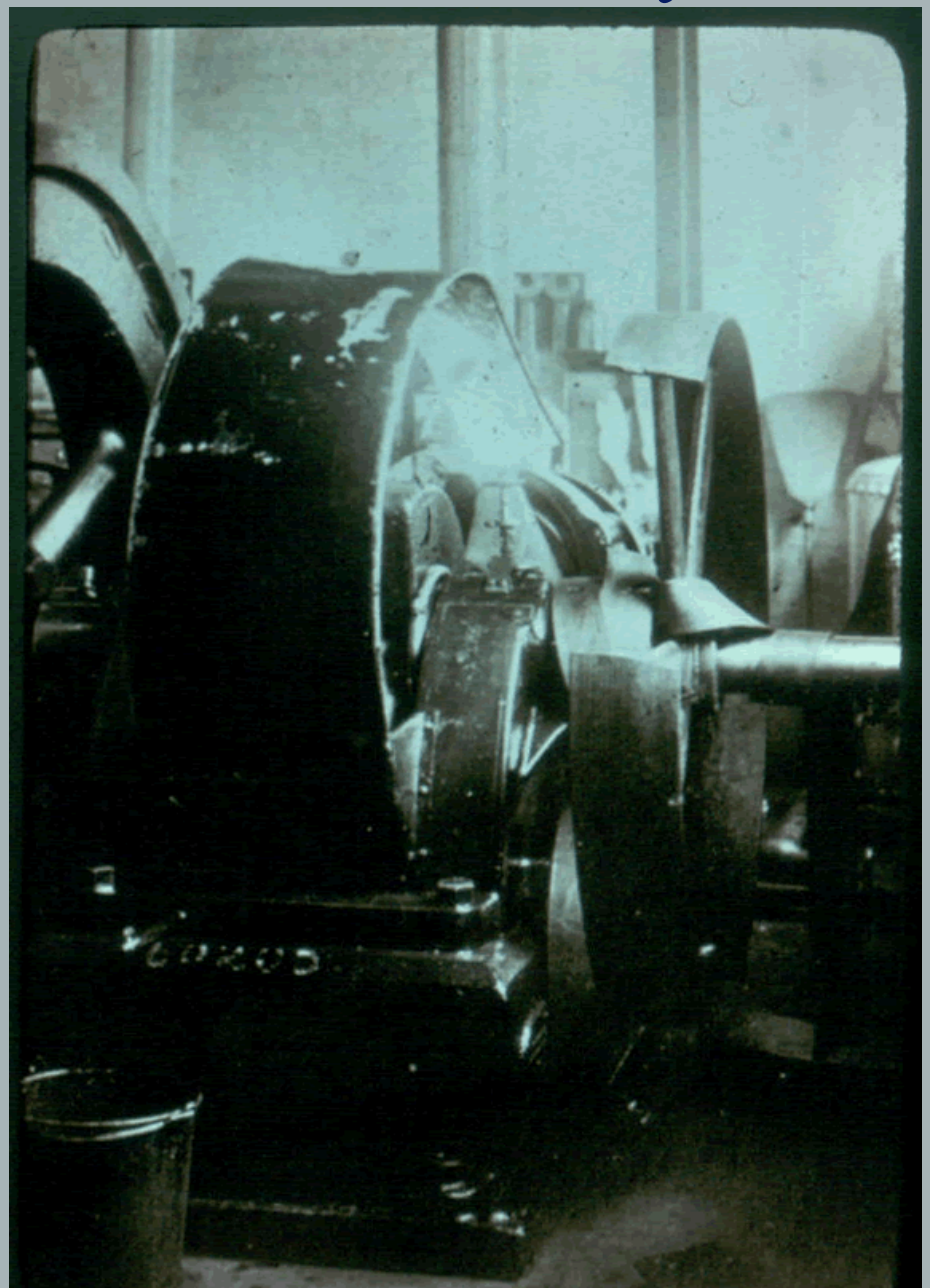
Interior



The interior of the powerhouse was a curious sight. Amongst other equipment were two kerosene engines: the small one driving a 110volt DC generator for lighting; the larger one driving a 2200-volt AC generator, which was stepped up to 25,000 volts for the transmitter.

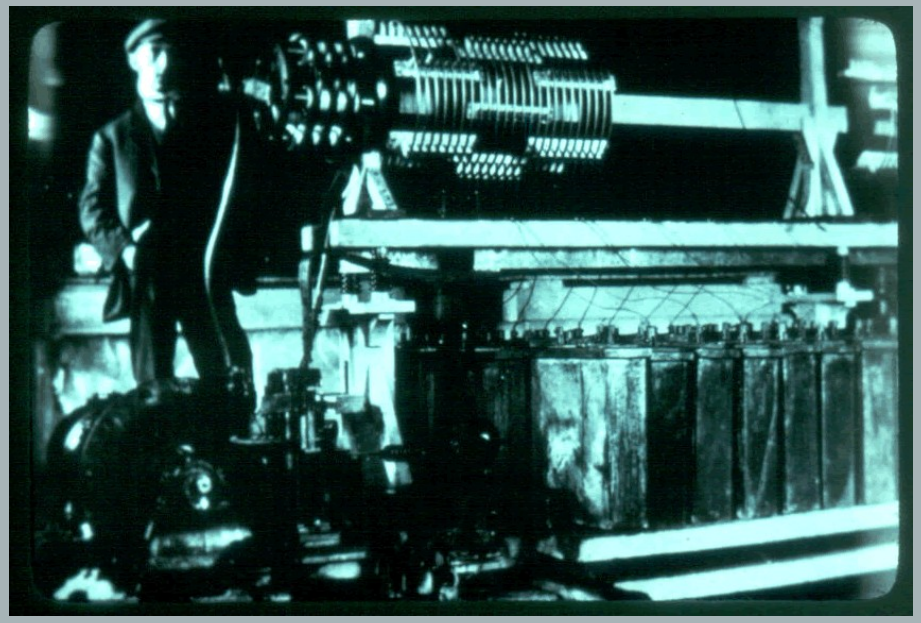
On cold nights, a can of kerosene was heated on the stove to start the small generator and coupled with the large engine to start it. If the engine didn't start, there was no transmission that night.

Flywheel



Breakdown of the large engine flywheel halted operations: Many accidents occurred in this early station, and replacement parts were difficult to obtain at such an isolated location as South Wellfleet.

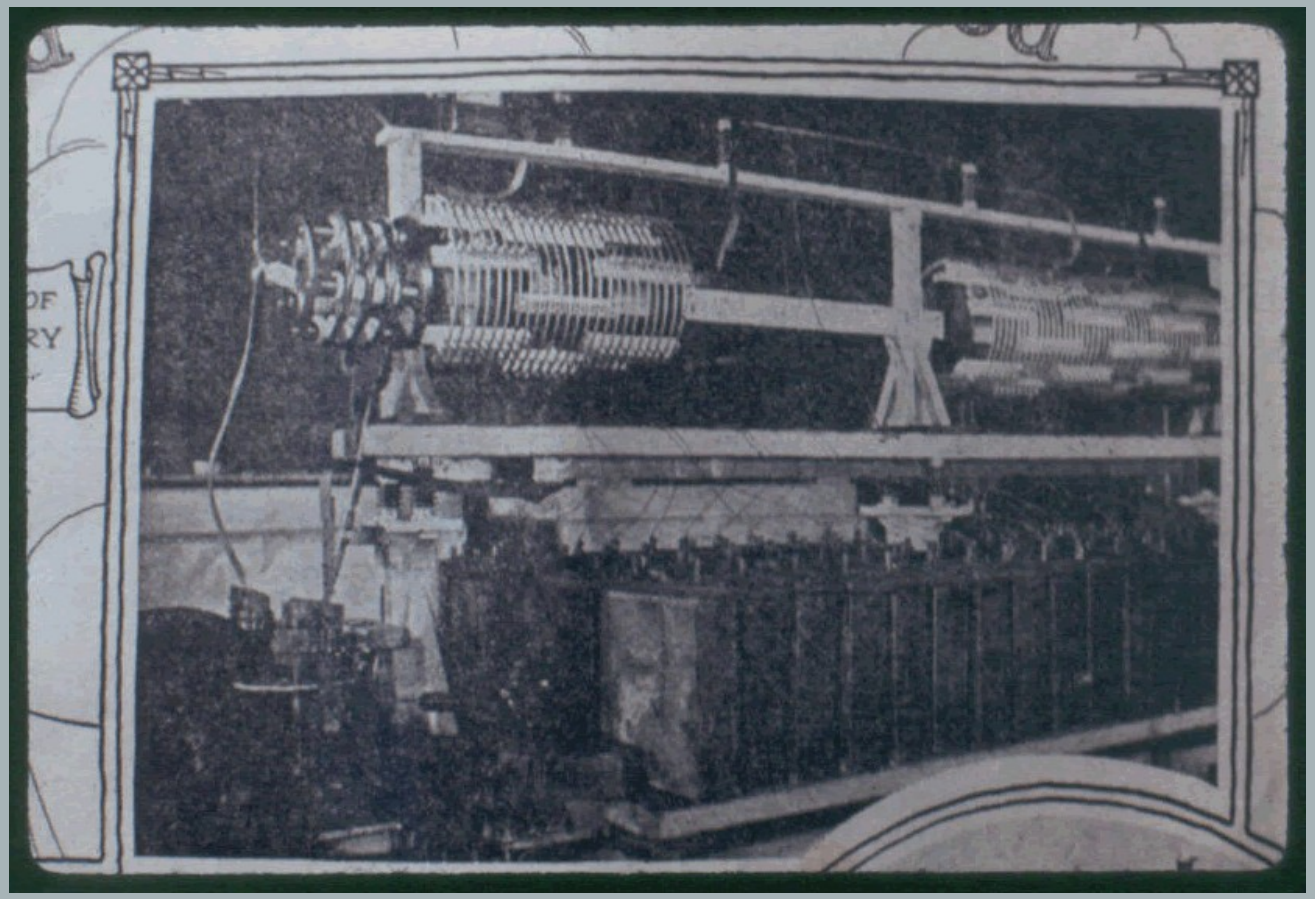
Condensers



The Marconi Station transmitter was also an awe inspiring sight. To the lower right was a bank of 33 condensers made from glass plates and metal sheets set in metal cans filled with oil. Above these are the inductors. In the lower left is the famous rotary sparkgap, nearly 3 feet in diameter and revolving at 2100 rpm, producing 35 kilowatts of radio-frequency power.

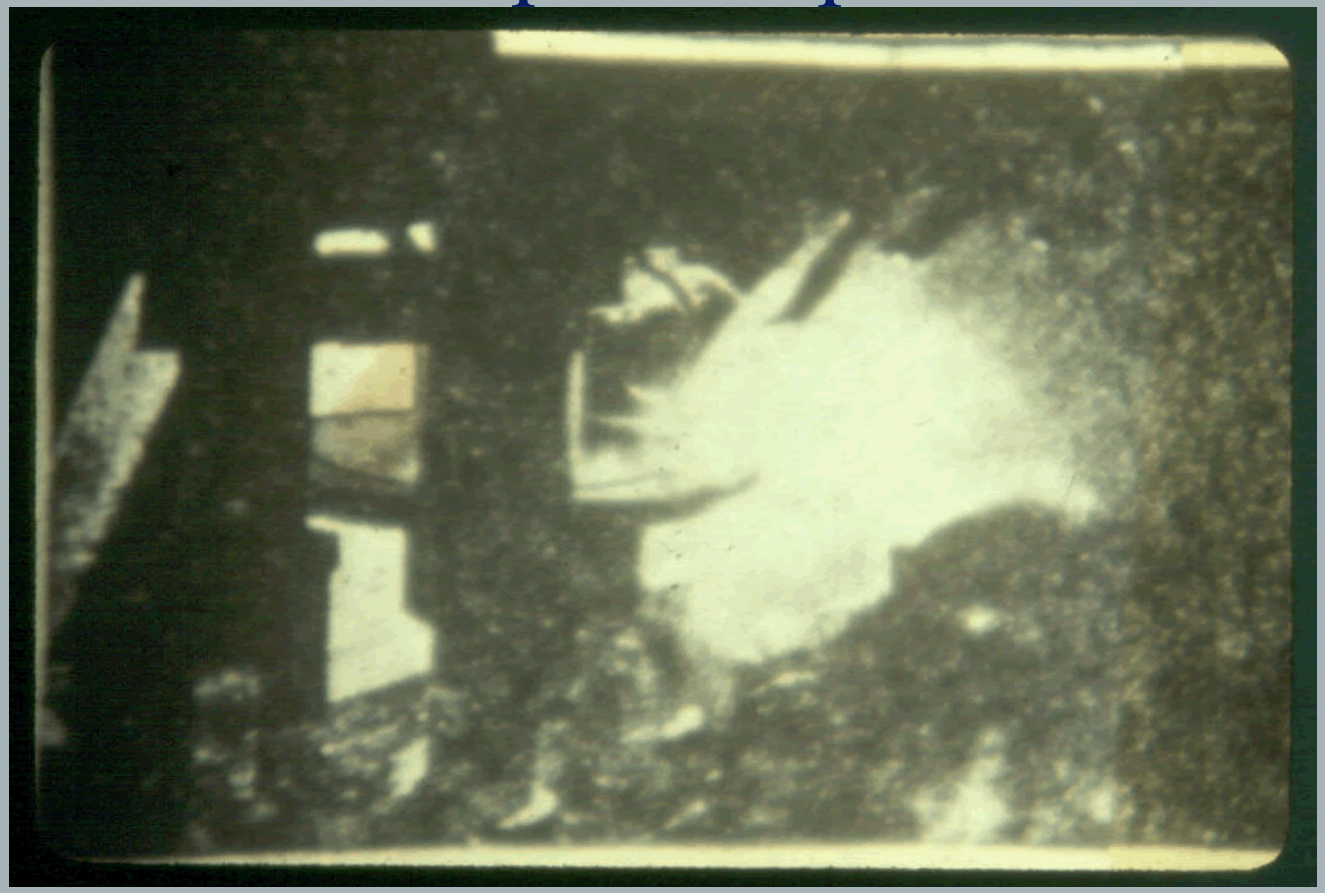
This was the first sparkgap of its kind and size. No one ever entered the transmitter room while the sparkgap was whirring. Ear-splitting noise, blinding sparks, and poor insulation made it exceedingly dangerous.

Condensers



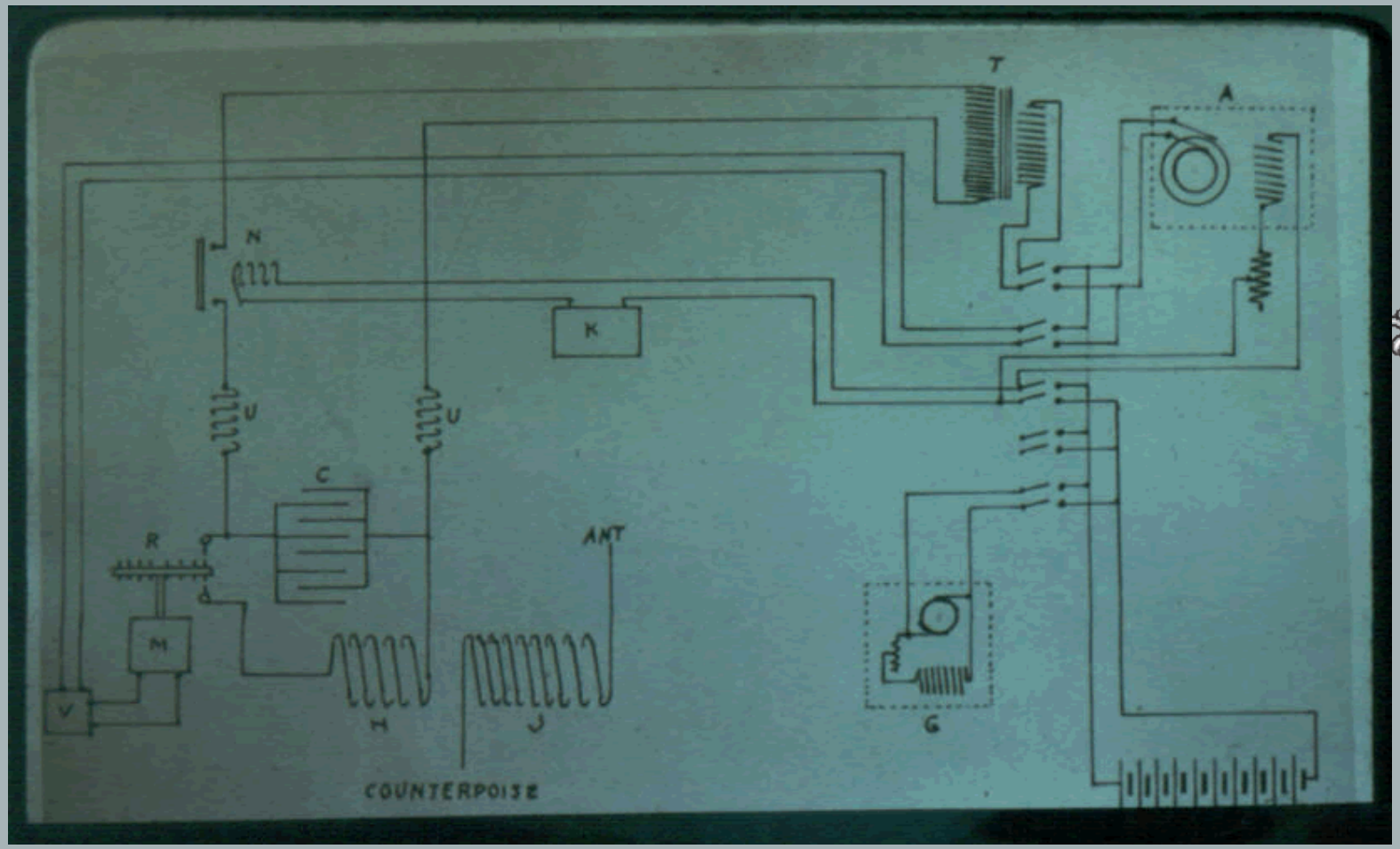
Another view of the transmitter shows the full bank of condensers and the loading coil in the upper right.

Spark Gap



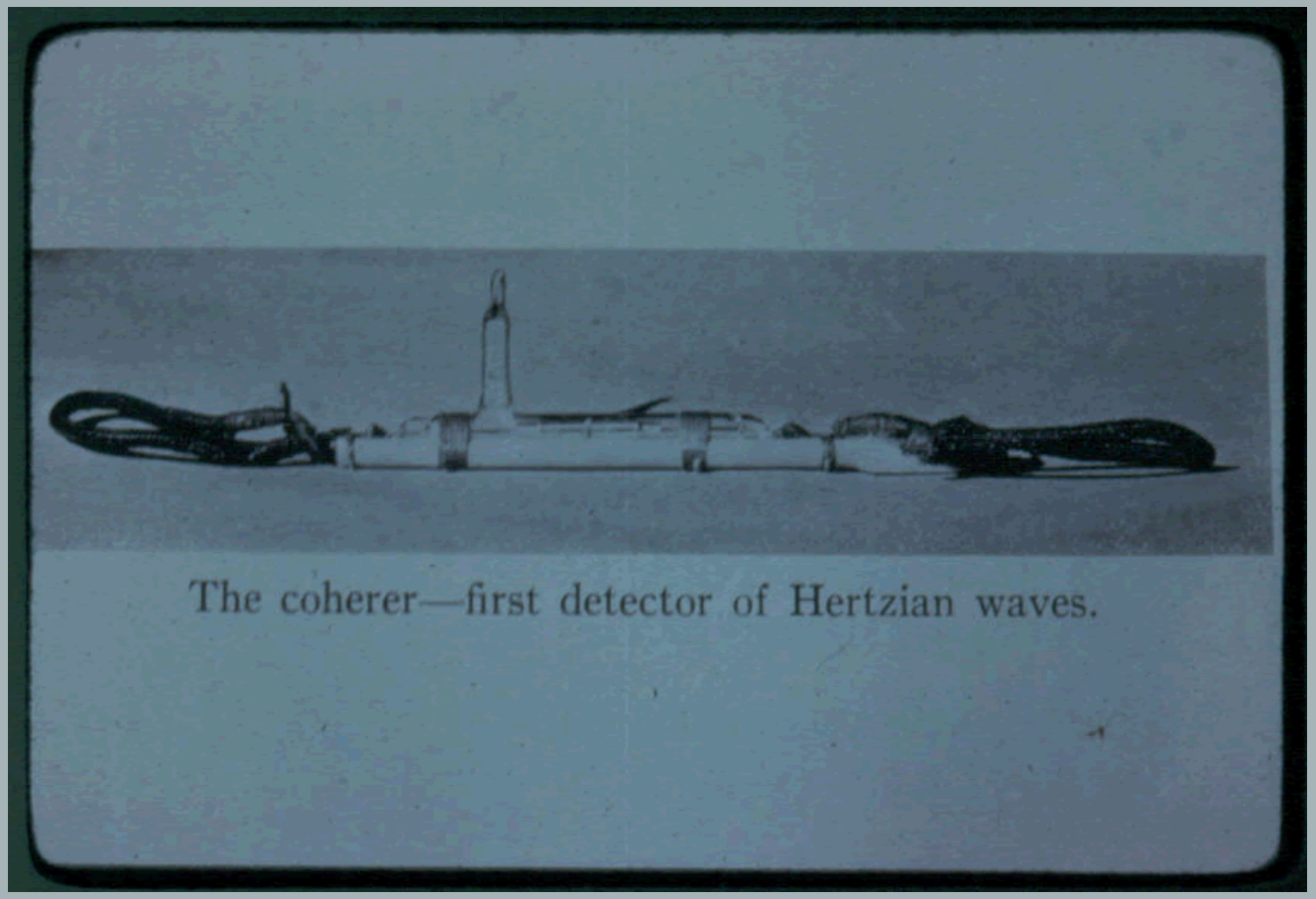
The rotary sparkgap could not be viewed in operation, but this picture was taken by the light of the flame produced by the arc. A jet of compressed air was used to cross the gap to keep it cool. Transmissions could last only for 45 minutes, and then the transmitter required 15 minutes for cooling before operation could be resumed.

Schematic



A schematic diagram of the transmitter shows its complexity.

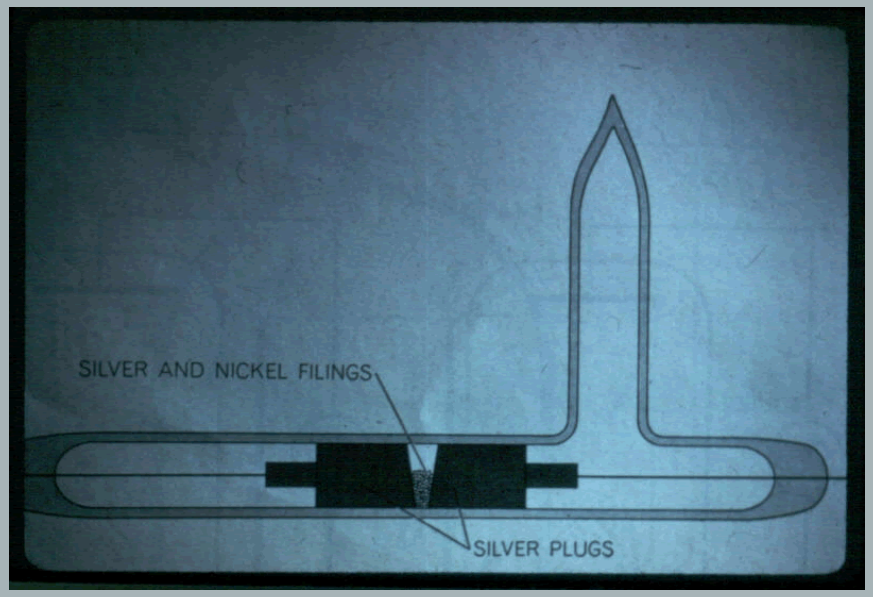
Coherer Detector



The coherer—first detector of Hertzian waves.

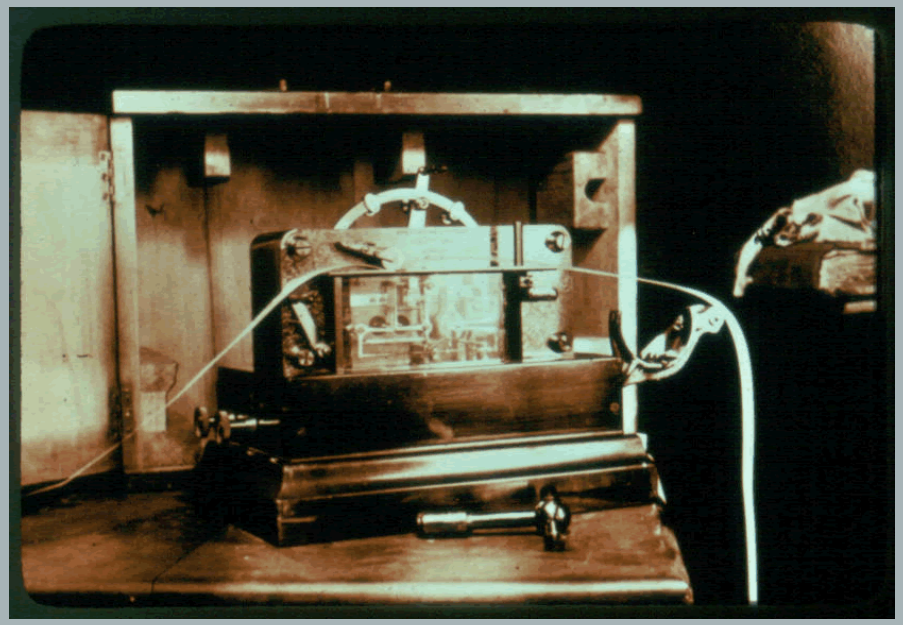
The coherer detector was used in the first receiver.

Diagram/Coherer



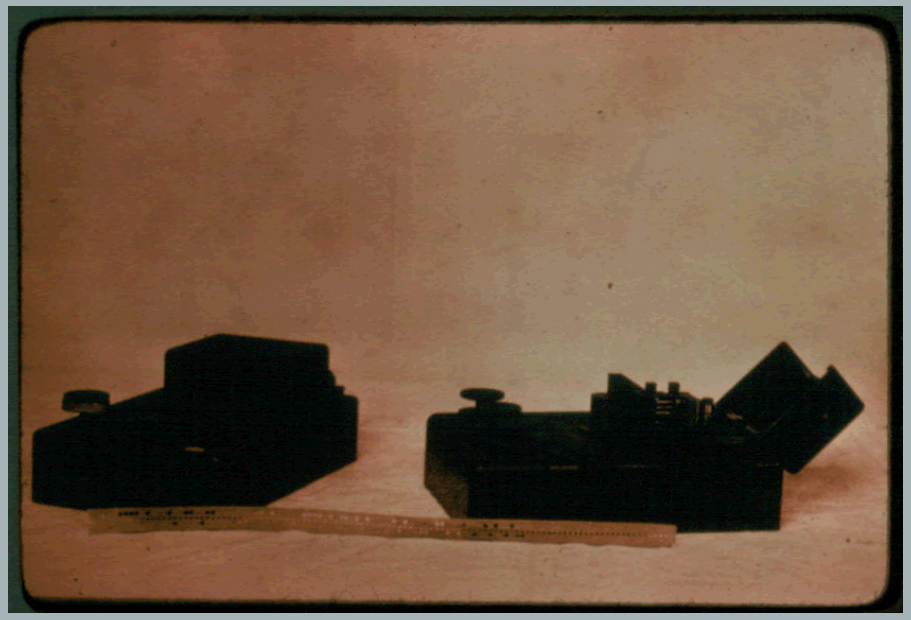
A drawing of the coherer shows it consisted of an evacuated glass tube with two silver plugs and a mixture of silver and nickel filings in between these plugs.

Printer



A Wheatstone-Morse Paper Tape Printer was also used. This machine was adapted from telegraphy and inked the message on paper tape. Headphones for receiving signals were not used until later.

Punching Machine

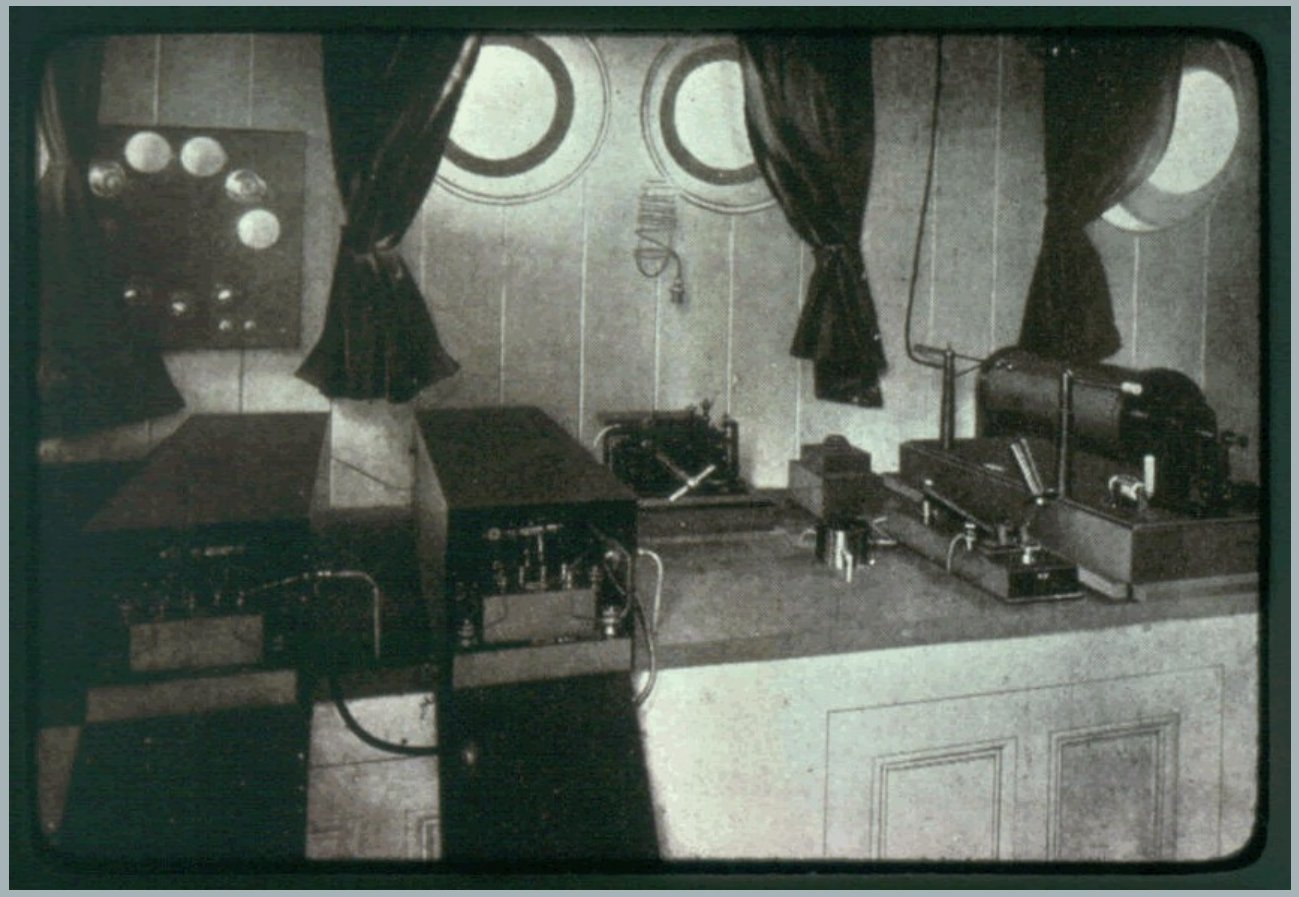


A Profolover machine was used for punching tape in advance for transmission: Reception was by inked tape; (pouse) transmission was punched tape and by hand pump.

Lucania

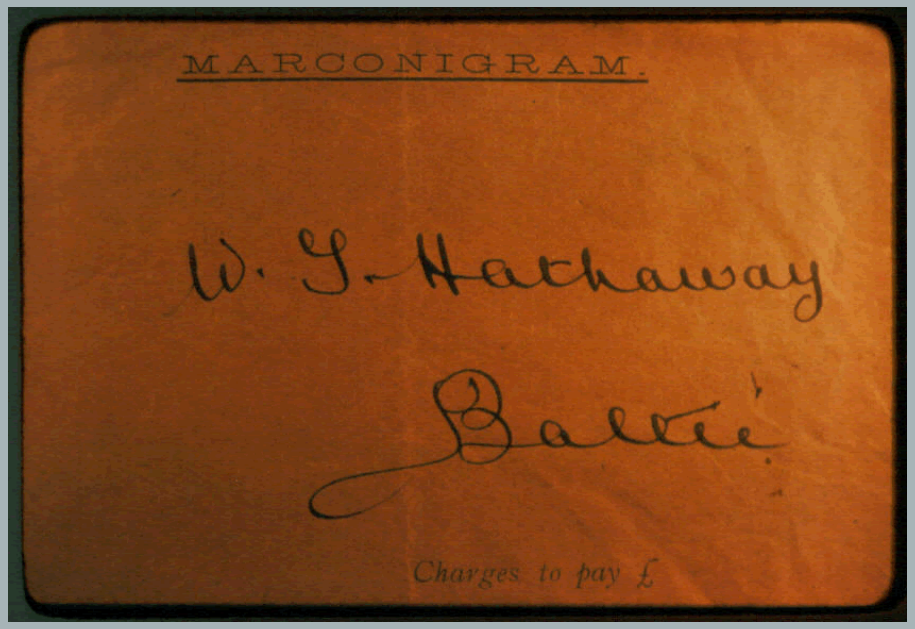
June 15, 1901 - The Cunard Liner "Lucania" became the first ship to use Marconi equipment commercially.

Wireless Shack



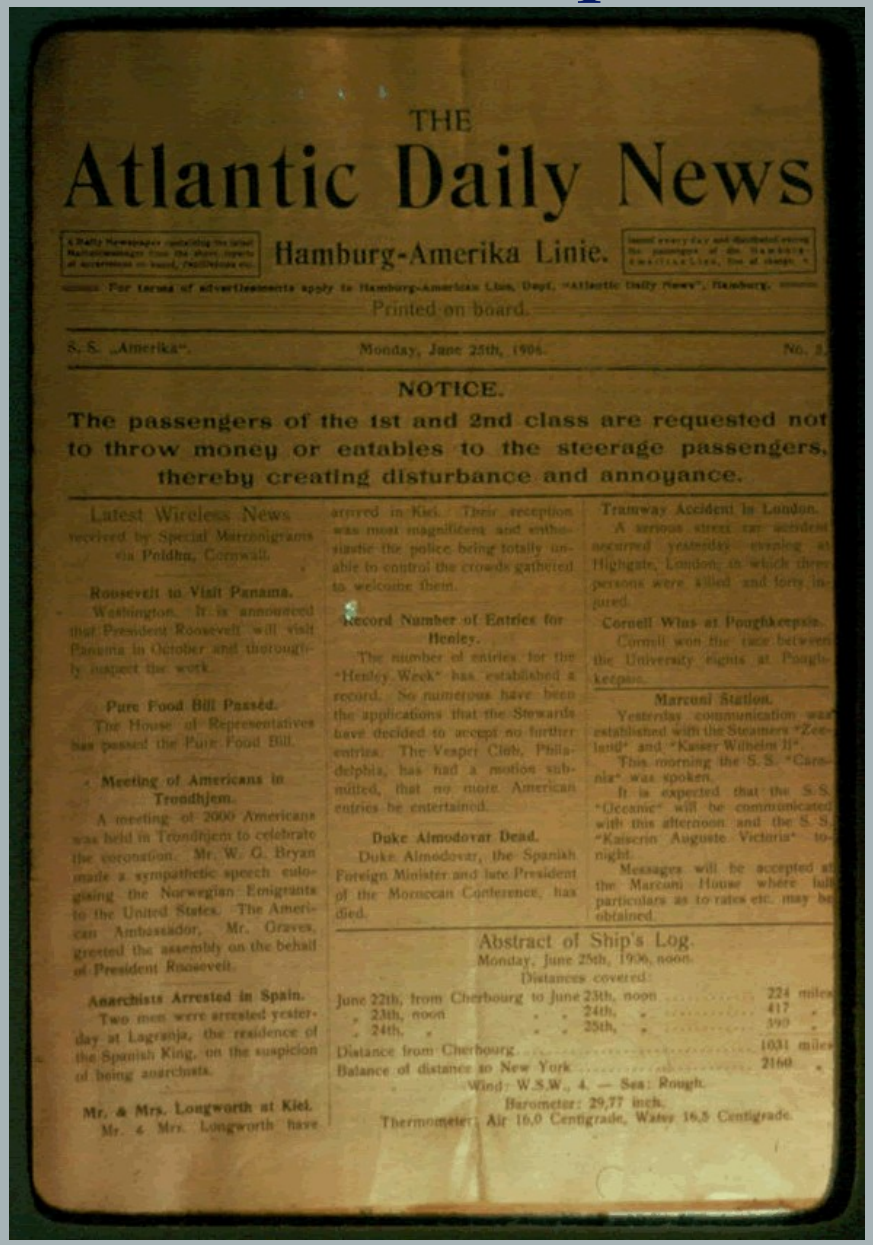
A Wireless shack was set up in the "Lucania". Passengers complained about the noise the sparks made, keeping them awake at night.

Marconi-Gram



An early Marconi-gram sample was much more primitive than later ones that looked very similar in format in traditional telegrams.

Ships Newspaper



THE

Atlantic Daily News

Hamburg-Amerika Linie.

Printed on board.

S. S. „Amerika". Monday, June 25th, 1906. No. 2.

NOTICE.

The passengers of the 1st and 2nd class are requested not to throw money or eatables to the steerage passengers, thereby creating disturbance and annoyance.

Latest Wireless News received by Special Marconigrams via Poldhu, Cornwall.

Roosevelt to Visit Panama.

Washington. It is announced that President Roosevelt will visit Panama in October and thoroughly inspect the work.

Pure Food Bill Passed.

The House of Representatives has passed the Pure Food Bill.

Meeting of Americans in Trondhjem.

A meeting of 2000 Americans was held in Trondhjem to celebrate the coronation. Mr. W. G. Bryan made a sympathetic speech eulogising the Norwegian Emigrants to the United States. The American Ambassador, Mr. Graves, greeted the assembly on the behalf of President Roosevelt.

Anarchists Arrested in Spain.

Two men were arrested yesterday at Lagranja, the residence of the Spanish King, on the suspicion of being anarchists.

Mr. & Mrs. Longworth at Kiel.

Mr. & Mrs. Longworth have arrived in Kiel. Their reception was most magnificent and enthusiastic the police being totally unable to control the crowds gathered to welcome them.

Record Number of Entries for Henley.

The number of entries for the "Henley Week" has established a record. So numerous have been the applications that the Stewards have decided to accept no further entries. The Vesper Club, Philadelphia, has had a motion submitted, that no more American entries be entertained.

Duke Almodovar Dead.

Duke Almodovar, the Spanish Foreign Minister and late President of the Moroccan Conference, has died.

Tramway Accident in London.

A serious street car accident occurred yesterday evening at Highgate, London, in which three persons were killed and forty injured.

Cornell Wins at Poughkeepsie.

Cornell won the race between the University eights at Poughkeepsie.

Marconi Station.

Yesterday communication was established with the Steamers "Zeeland" and "Kaiser Wilhelm II".

This morning the S.S. "Carsnia" was spoken.

It is expected that the S.S. "Oceanic" will be communicated with this afternoon and the S.S. "Kaiserin Auguste Victoria" tonight.

Messages will be accepted at the Marconi House where full particulars as to rates etc. may be obtained.

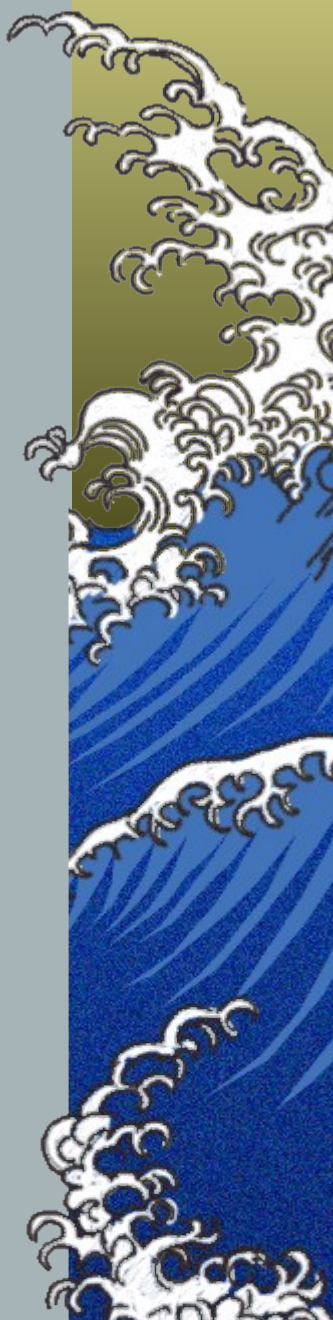
Abstract of Ship's Log.
Monday, June 25th, 1906, noon.
Distances covered:

June 22th, from Cherbourg to June	23th, noon	224 miles
„ 23th, noon „ „	24th, „	417 „
„ 24th, „ „ „	25th, „	390 „
Distance from Cherbourg		1031 miles
Balance of distance to New York		2160 „

Wind: W.S.W., 4. — Sea: Rough.
Barometer: 29,77 inch.
Thermometer: Air 16,0 Centigrade, Water 16,5 Centigrade.

An early ship's newspaper however shows a much greater degree of sophistication when daily news later came from the South Wellfleet station - a new era in newspaper printing aboard ship.

But let us now recount the historic event at South Wellfleet that made much of this possible.



Marconi & Kemp

On the night of January 18,1903 tensions were high as this was to become the night of the first trans-Atlantic transmission from the United States to Europe. Marconi is reading the tape and Kemp is at the transmitter pump.

Operation on that famous night lasted only a few hours, although preparation had gone on for three years.

Charlie Paine

Cape Codder Charlie Paine as he appeared in 1940: often reflected on the event. Interestingly, the only account we have of that famous night is from Paine. He stood by with his horse and buggy for six nights until Marconi decided conditions were right.

Station

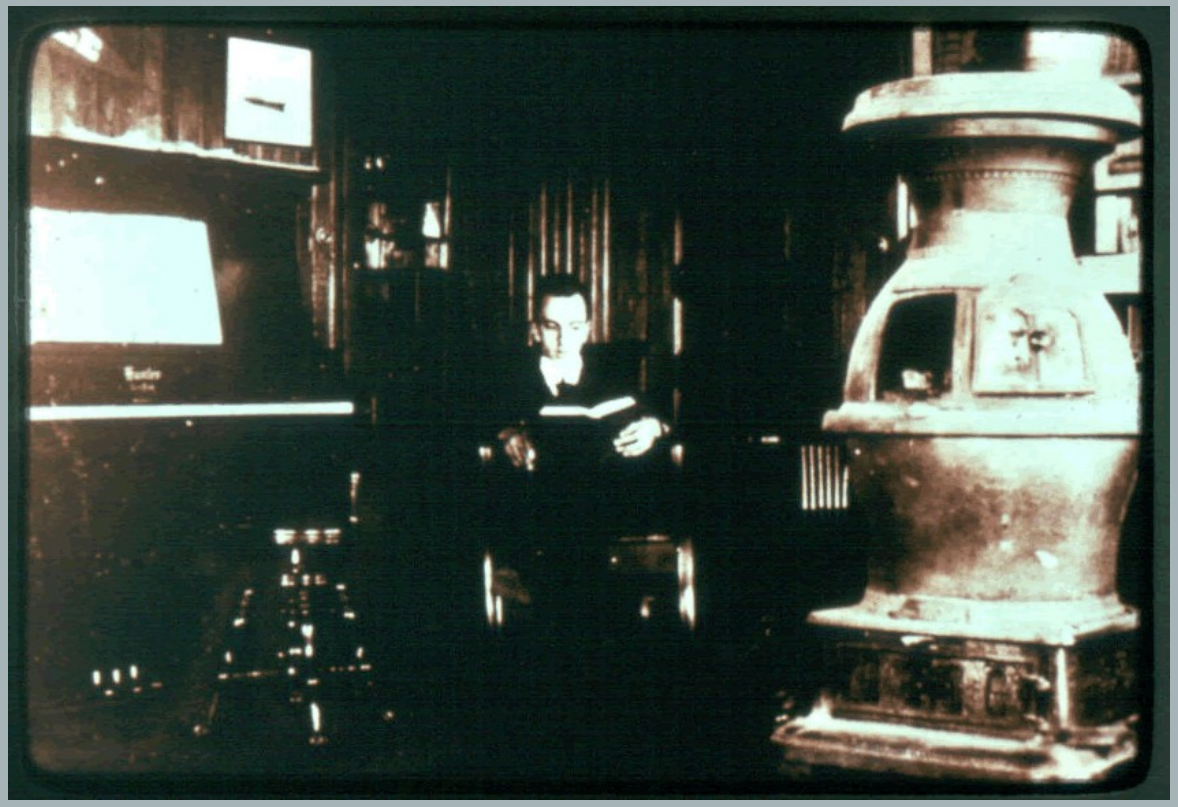
A message was sent to King Edward VII of England from President Theodore Roosevelt and was received direct at Poldhu, with Nova Scotia standing by to relay if necessary, since that station was already in operation and almost 1000 miles closer to England.

Upon the surprising reception of the reply message direct from England, Marconi went to the bungalow to transpose the message from international code to Morse telegraph code. Then, Paine drove to the South Wellfleet railroad station telegraph office with the reply.

Telegraph Station

The South Wellfleet Railroad Station was the destination of Charlie Paine - a mile or so across the Cape from the Marconi Site. The message was put on the wires by Jim Swett, telegraph operator at the railroad station.

Sitting Room



Life at the wireless station was plush for its remote setting. This bungalow interior is one of the so-called sitting rooms. The piano was installed by Marconi, who was an accomplished player.

Sitting Room

Another sitting room in the bungalow: looks rather comfortable, but it must have been cold with no inner walls and no cellar. The building was built on posts.

Steward

An Englishman by the name of Harrod was the first steward for the living quarters.

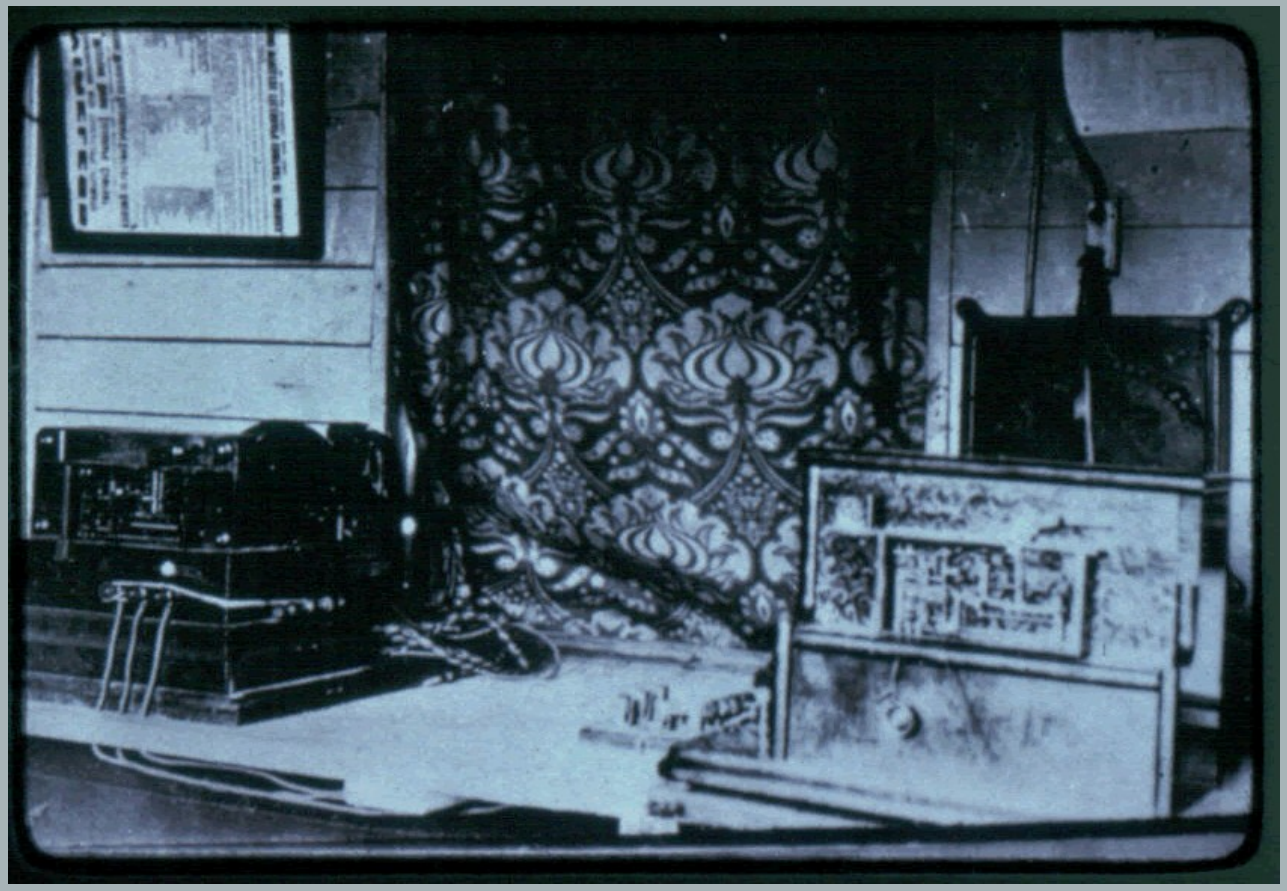
Housekeeper

Mrs. Higgins from Wellfleet was the housekeeper: She had one gripe the clotheslines were charged with electricity, and hanging up the Monday wash gave her shocks.

Telegraph Lines

Although the Wireless station bungalow appeared the same from the outside, improvements continually took place. The scene changed when telegraph lines were installed in 1905 to provide a direct line to New York for the news.

Tape Machines



New telegraph equipment was installed in the bungalow including two tape machines. There were also a hand key and a taper available.

Shipwreck

Although different in many respects, the station still reflected life on Cape Cod. When the ship “Castania” came ashore in a storm in 1914(6?) the survivors were brought to the wireless station.

Cat

A feline survivor gained some notoriety. This cat survived the wreck and was found on board the next day. It decided to stay and was named “Castania.”

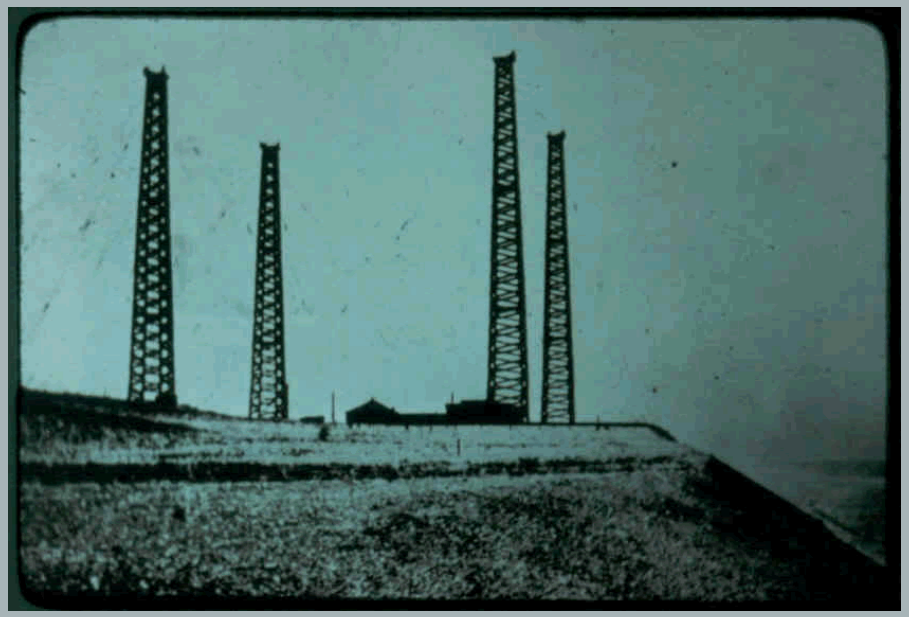
Crew

As times changed so did the crew members as shown in 1912. In the upper left is Jim Wilson of Orleans. At the age of 10 he climbed one of the wooden towers. Here he is at 20 years of age. He became the last survivor of the Marconi operation.

Irv Vermilya

Irving Vermilya was the last manager of the wireless station. He often wondered how noisy the station was. So one night he walked down the beach and heard the spark gap five miles downward. No wonder Cape Codders didn't like Marconi's installation!

Station



As quickly as it emerged, the Marconi Wireless Station receded in prominence. In 1917, the station was closed for several reasons:

- WWI - The US Navy shut down many wireless stations
- The ocean had eroded over 150' of sand cliffs. As early as 1907, the engineers realized that they had built the station too close to the ocean.
- The transmitter was obsolete. It had not been upgraded since installation.
- Dr. Lee Deforest had invented the 3-element vacuum tube which outmoded the spark transmitters.

….and so the old towers were cut down by Ed Cook's crew.

Towers/Cliff

The outer towers were pulled over the cliff. The inner towers were cut down in several sections.

Downed Tower

A felled tower, with Cape Cod kids inside shows their enormous size.

Turnbuckles

The enormous turnbuckles, which were used to help support the towers were also dismantled.

Debris

Piles of guys and fittings were scattered over the site. These were eventually removed by souvenir hunters. At the corner of Wireless Road, a house was fenced in by its owner with some of these 1-inch diameter guys.

Abandoned Station

Abandoned, the wireless station buildings looked like a ghost town in 1924.

Station/Sand

Sand continued the destruction of the buildings. Cape Codders tore them apart for firewood.

Timbers

Cape Codders also cut up pieces of the towers for firewood.

Tower Base

The eastern most tower bases gradually fell over the edge of the sand cliff. The bases were cement, 30 feet square and 4 feet thick.

Tower Base/Cliff

For quite a time this tower base was visible at the bottom of the cliff. *(2021 -they can still can still be occasionally seen at very low tides in winter months.)*

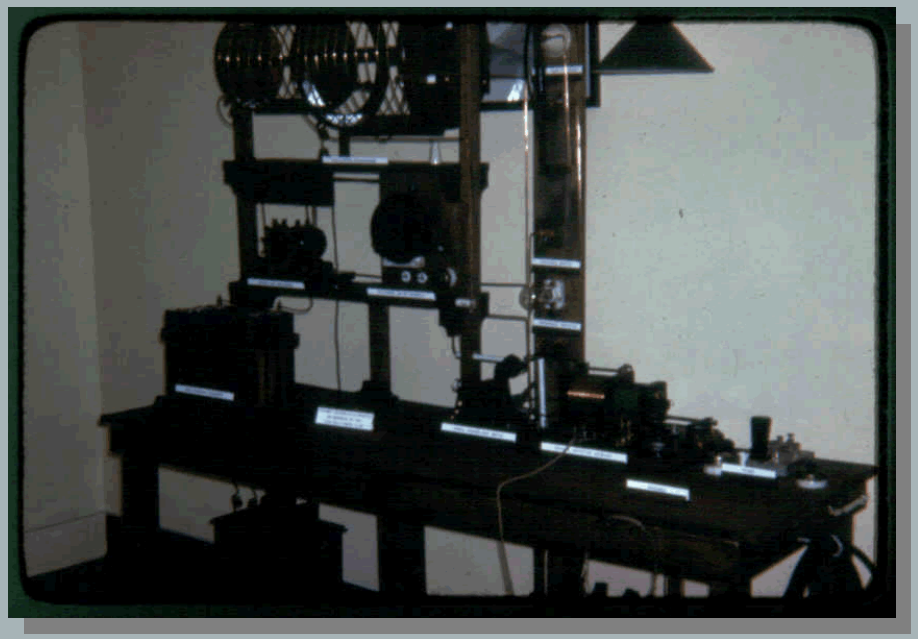
Carl Taylor

Carl Taylor. One of the former wireless station managers returned to the site in 1963. Here he is unveiling a bronze plaque dedicated at that time.

Plaque

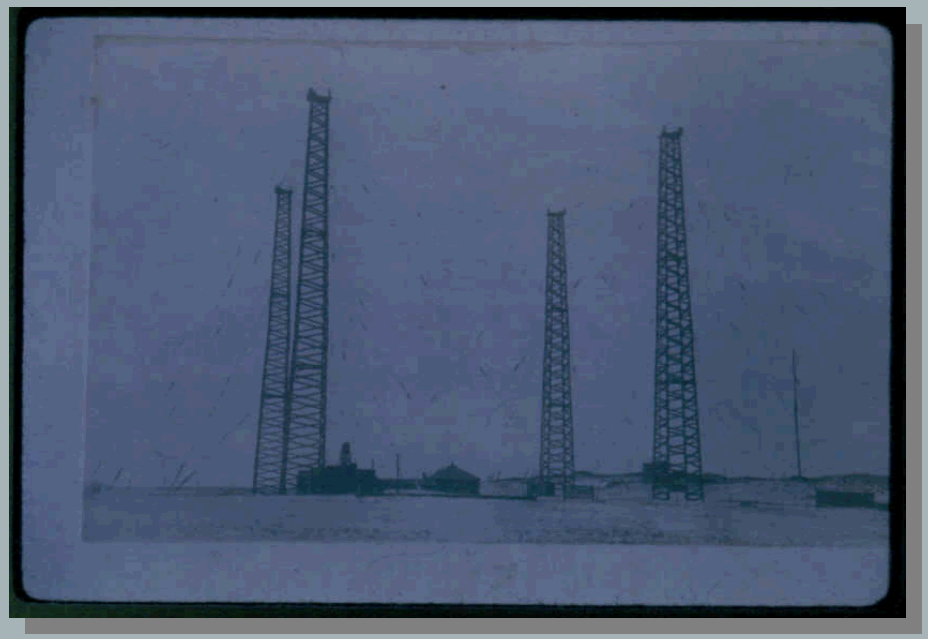
The bronze plaque commemorates the historic significance of this site on a world-wide scale.

Model Rig



Inland from the site is the model wireless rig at the Cape Cod National Seashore Headquarters. This is not a miniature replica of Marconi's apparatus, but a rotary spark gap representative of the equipment of that era. It is on display and is in operating condition. The rotary gap of the working model is 6 inches in diameter; Marconi's was nearly 3 feet. The power here is 250 watts; Marconi's was 35 kilowatts.

Old Station



During its 15 years of operation, the South Wellfleet station had three different call signs. First, “CC" for Cape Cod, "MCC" for Marconi, Cape Cod, and finally, “WCC" in 1913 when the first International Radio Conference assigned the prefixes. And Today as a part of the RCA enterprise, WCC is very much alive in Chatham (*closed in 1997*), the busiest commercial station on the East Coast with worldwide communication 24 hours a day and interestingly, still using the International Code that Marconi used.

The materials for this show was selected from the Marconi collection at the Cape Cod National Seashore. We hope you enjoyed this little-known phase of Cape Cod history and will take the time to visit the site or learn more about this subject.

The park was established in 1961. By then, station remains, and written records were long gone. The park now has some copies of some documents/images.

Cape Cod National Seashore

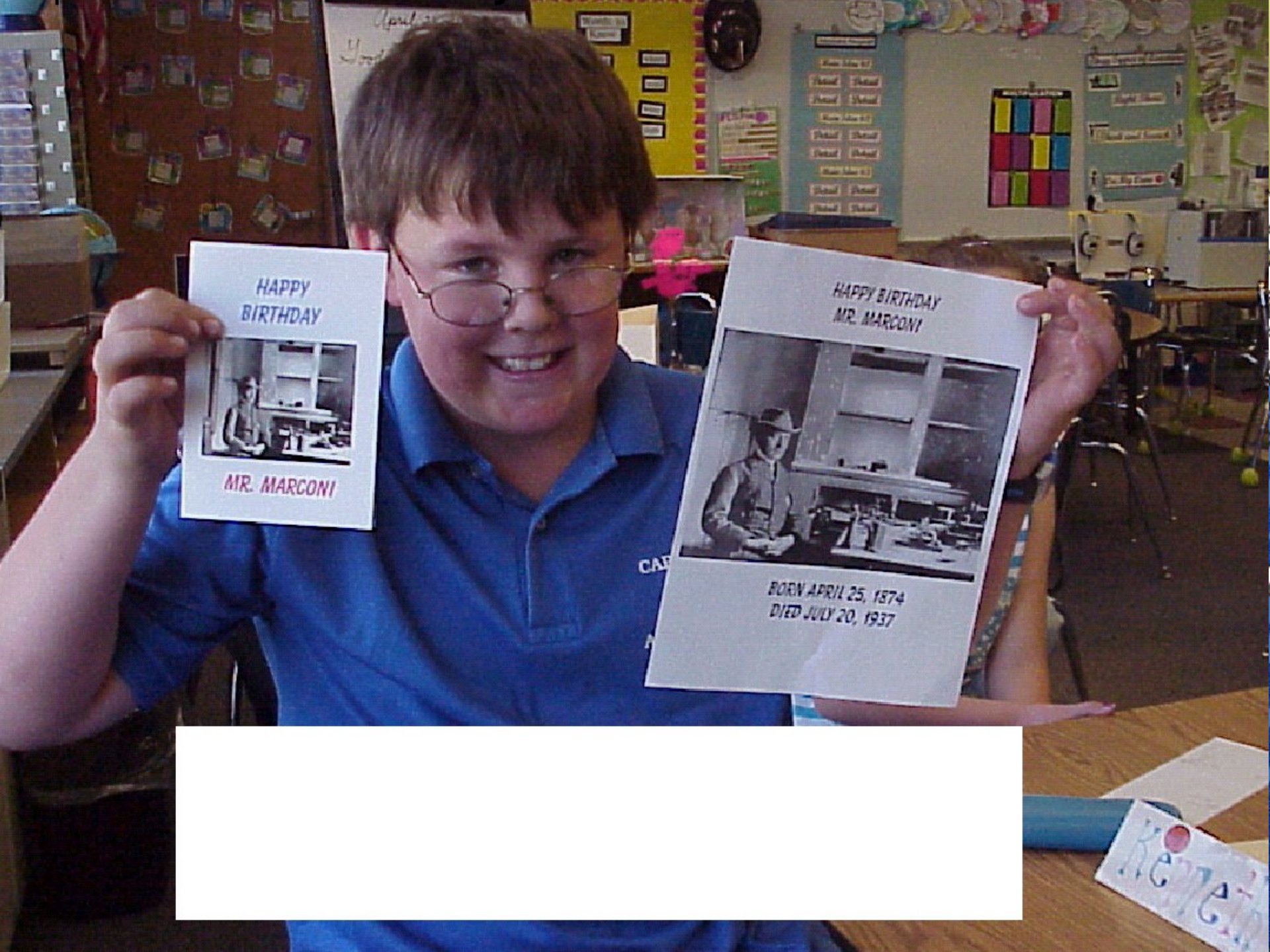
The next slides are a sample of events organized by KM1CC – the Marconi Cape Cod Radio Club--and its many ham supporters, to commemorate Marconi's achievements and support the growth and purpose of amateur radio.

January 18, 2003

The world celebrated the100th Anniversary of the first wireless transatlantic message sent by Marconi from his South Wellfleet Station to Poldhu, UK. KM1CC and the park hosted a 10 day on the air event. It included a space station contact

January 17, 2006 KM1CC used a balloon antenna to make world wide QSO's to commemorate the anniversary of Marconi's first transatlantic message sent from the USA to the UK on Jan 18, 1903.


Pi-K1RV
Bud-
K2LP


HAPPY
BIRTHDAY
MR. MARCONI
HAPPY BIRTHDAY
MR. MARCONI
BORN APRIL 25, 1874
DIED JULY 20, 1937

Jack Binns - Wireless Hero
100th Anniversary Commemoration
January 23, 1909 - 2009

Above left: The noted hero of the *Florida - Republic* disaster was Jack Binns. He was the wireless operator aboard the White Star Liner, who stuck to his radio key, directing the rescue ships to the scene. The rescue of the 700 persons aboard the stricken ship was credited to the endurance of Binns and his radio. *Photo reproduced from Harpers Weekly.* **Above Right:** Following the thrilling rescue of the passengers and crew of the *Republic,* medals were issued by the passengers to the crewmen of the three vessels; *Republic, Baltic* and *Florida* commemorating the event. The obverse pictured the steamer *Republic* with a hole in her side with the letters "C.Q.D." denoting the radio distress signal at that time, sent out by Jack Binns. The reverse carried the date and purpose of the medal. *Photos by the Author.*

Image printed with permission from William P. Quinn, *Cape Cod Maritime Disasters*, 1990.

KM1CC - Marconi Cape Cod Radio Club
Commemorative Event

EXPERIENCE YOUR AMERICA


K1ATT
Virginia L Binns, granddaughter of Jack Binns
Lewis Mason, former WCC employee

2010 160M CW contest

K1LZ and crew set up a 4 square antenna. They came in 1st place for North America.

April 2012 Titanic 100th anniversary Event at Marconi Wireless Site. Massachusetts Maritime cadets participated in the ceremonies.

Frank Messina-

KB1UZZ-Liaison from Chatham Marconi to KM1CC for Titanic 100.

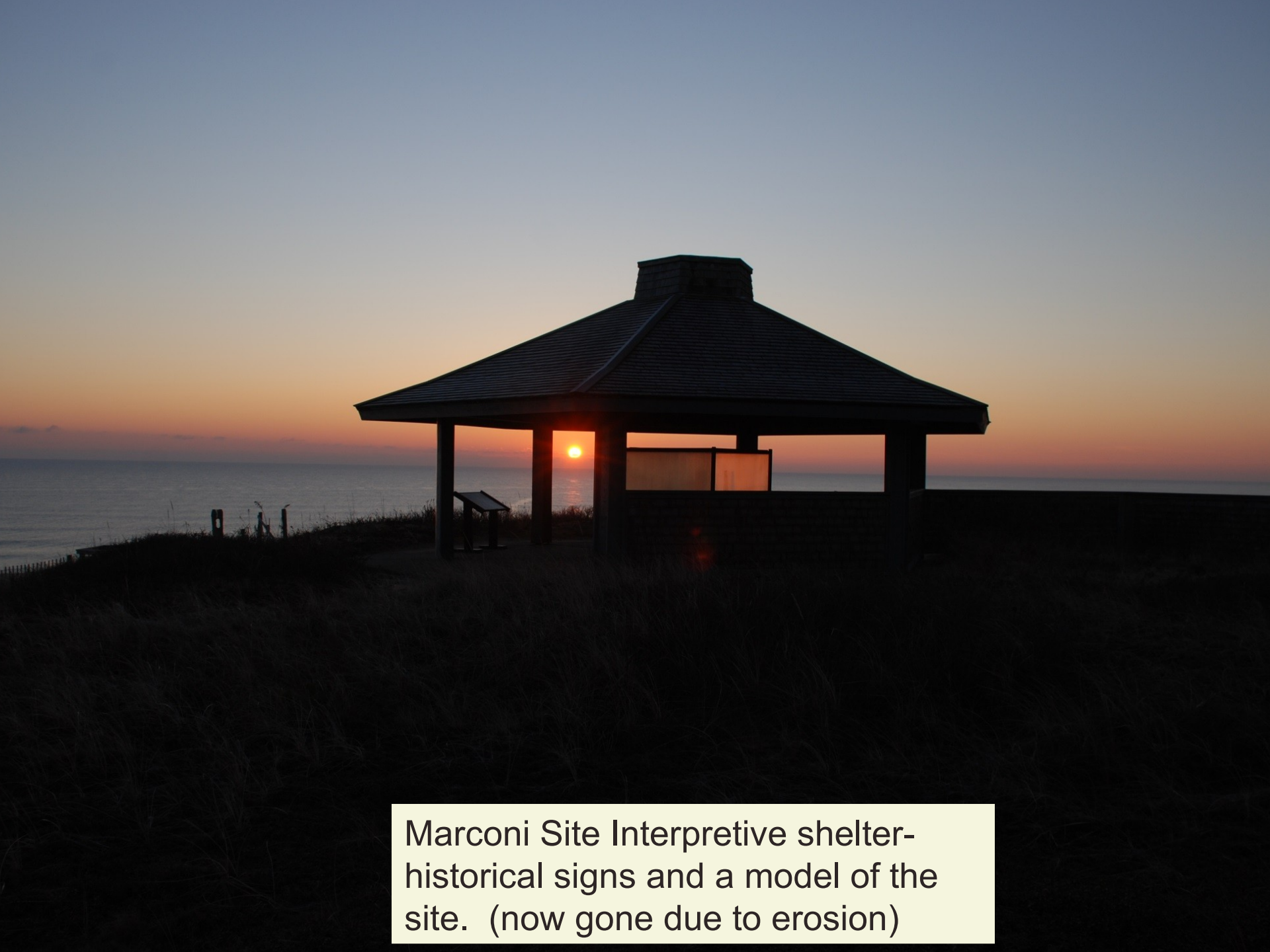
April 2012 Titanic 100 - Chatham Marconi WCC used the KM1CC call sign to make commemorative QSOs.

At the conclusion of the ceremony in South Wellfleet, the Chatham Coast Guard crew placed a wreath in the water offshore from the South Wellfleet Marconi Wireless Site . They were signaled with Morse Code flags when to lay the wreath.


Cape Cod National Seashore's Headquarters Building
Whitey-
K1VV
oscillation
transformer
discharger motor controls
PLEASE DO NOT TOUCH


GUGLIELMO MARCONI
THE PIONEER OF WIRELESS
COMMUNICATION
SON OF ITALY
CITIZEN OF THE WORLD


2018 Princess Elettra made a successful contact with VO1AA- location of the letter “S” transmission in December 1901. Signal Hill, St. John’s Newfoundland
Barbara- N1NS



Marconi Site Interpretive shelter- historical signs and a model of the site. (now gone due to erosion)

Gone, but not forgotten

Guglielmo Marconi made communication history from these South Wellfleet cliffs in 1903 by sending the first transatlantic wireless message to Great Britain. Since its establishment in 1961, Cape Cod National Seashore has interpreted this technological achievement through exhibits and radio events. Over time, remains from the wireless station site have been lost as the shoreline has eroded. A model in the park headquarters building depicts the layout of the original wireless station site.

Demolition of the exhibit shelter, July 2013

Following a particularly harsh 2012-2013 winter, in July 2013 the exhibits and the shelter that covered them were a mere 32 feet from the edge. In order to avoid having the large shelter and concrete pad go over the cliff, park staff removed them from the site. They considered relocating the shelter further inland, but this was not structurally feasible.

n the future new exhibits will be isntalled near the parking area, safely way from the eroding dune, to interpret the site's history.

r your safety: Do not go around fences

Antennas held aloft by balloons

Thank you Marconi for

“Seeing Beyond the Horizon”

Born April 25, 1874- Bologna , Italy

Died July 20, 1937, Rome, Italy

1901 Nobel Prize in Physics

Fun fact-

His mother was a member of the Jamison Whiskey family. They supported Marconi and assisted in arranging his meeting with William Preece, British Postmaster.

After the letter “S” transmission-Jan 13, 1902 American Institute of Electrical Engineers held a special dinner in Marconi’s honor at the Waldorf Astoria in New York City. A simple but delicious cocktail was created by the Waldorf Astoria in honor of Marconi for this dinner.

Marconi Cocktail

Ingredients:

- 1.75 oz applejack
- 3/4 oz sweet vermouth
- 2 dashes orange bitters

Preparation:

Add ingredients to a mixing glass, fill with ice, stir and strain into a cocktail glass.

KM1CC Next On the Air Event

January 18, 2021

118th Anniversary of Marconi Sending the first USA to Europe (UK) Transatlantic Message

Local time Sunday Jan 17 starting at 7 PM- Monday Jan18 7 PM ET

Check Facebook
https://www.facebook.com/KM1CC

and DXSummit.fi

km1cc.capecod.fn51@gmail.com

On line copy of

My Father, Marconi by Degna Marconi (1962)

https://archive.org/stream/myfathermarconi010955mbp/myfathermarconi010955mbp_djvu.txt

p. 124 description of the scene in South Wellfleet the night the first transatlantic transmission is sent from that station to Poldhu.

On the night of January 18 between nine and eleven o'clock, it was transmitted to Table Head, with instructions to forward it to Poldhu. At the same time Marconi sent it from Cape Cod and, to his immense joy, England received the message direct from the United States on January 19. "All of a sudden," Charley Paine told Mrs. Beals, "I see Marconi come tearing out of the plant with both hands full of white tape. He was just like a crazy man. 'You wait there, Paine, and I'll be with you in a minute,' he yelled and started for his office. I got my buggy all turned round and ready . . . . When he come out again he had two big envelopes in his hand. They were messages to be telegraphed to Washington and New York. 'Drive like the wind,' said Marconi." He carried verification that this message had been received:

p,. 124 Text of messages exchanged

His Majesty, Edward VII, London, England.

In taking advantage of the wonderful triumph of scientific research and ingenuity which has been achieved in perfecting a system of wireless telegraphy, I extend on behalf of American people most cordial greetings and good wishes to you and all the people of the British Empire.

Theodore Roosevelt

South Wellfleet, Massachusetts, Jan. 19, 1903

The answer came back:

The President, White House, Wash., America.

I thank you most sincerely for the kind message which I have just received from you through Marconi's transatlantic wireless telegraph. I sincerely reciprocate in the name of the people of the British Empire the cordial greetings and friendly sentiment expressed by you on behalf of the American nation, and I heartily wish you and your country every possible prosperity.

Edward R. and I.

Sandringham, Jan 19, 1903