



## Who Invented Radio

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### Marconi Did Not Invent Radio

by Louis E. Frenzel

To some of you it may be blasphemy to say that Marconi was not the inventor of radio. But if you think that, you may as well start getting over it, because he didn't. All these years you probably heard about how Marconi single-handedly created wireless. Well, so did I. Yet as I found out recently, Marconi did not originate the idea. On the other hand, Marconi did indeed contribute considerably to the technology at the time. What he did was to take the basic concepts of others and make it into a practical workable system. That's called engineering. So if Marconi didn't invent radio, who did?

### The History of Wireless

The basic concepts of radio were actually predicted and proved mathematically by British physicist James Clerk

Maxwell in 1864. Then German physicist Heinrich Hertz took Maxwell's ideas and demonstrated them in practice in the 1885-1886 time frame. He used UHF waves to do this in his lab using a spark gap type apparatus. At that point lots of others, encouraged by Hertz's work, experimented with various systems of wireless telegraphy. Some of those include Russian Alexander Popov, Brit Oliver Lodge and Indian Jagadish Chandra Bose. And, of course, Marconi. Marconi actually received the famous British patent 7777 for inventing radio in 1897.

Most of this early work was spark gap technology that generated an signal like ultra wideband (UWB) that covered a huge bandwidth. It worked well with telegraphy. But perhaps the unsung hero in all of this development, in my opinion, is Edouard Branly, who invented the coherer. For those of you who have not followed the development of radio, a coherer is the early version of what we would call a diode today. The coherer was a glass tube filled with metallic filings. It actually performed like a rectifier, albeit a lousy one, but it did work. The key was to make it sensitive enough to respond to very low-level signals of early radio. Without a coherer on the receiving end, radio would have never gotten off the ground.

Marconi was very successful in assembling a system for wireless telegraphy. Although he was born in Italy, Marconi spent a great deal of his life in England. It was there that he got the patent and formed the British wireless

## Morse Code Testing for Ham License Will Soon End

New Part 97 rules without any Morse code examination requirement are expected to take effect February 23, 2007. If you currently have a Certificate of Successful Completion of Examination (CSCE) for a General or Extra class license which will still be valid when the new rules take effect, you will be able to redeem it for an instant upgrade without taking the code test. Sounds like you will still have to pay the exam fee, however, to cover the paperwork. CSCEs are only valid for 365 days, so if you passed the test for which you received the CSCE prior to Feb. 23, 2006 you will have to retest.

The new rules will also grant Novice HF privileges to Technician licensees who haven't passed the 5 wpm code test. They will not have to apply for an upgrade. All Technicians will have the same privileges. No more Tech and Tech Plus.

### De Olde Meeting Announcement

The next meeting of the Alliance ARC will be on Wednesday, February 7<sup>th</sup>, in conference room 1A on the west end of the Café in the new Alliance Community Hospital. Our meetings begin at 7:30 PM, and are an excellent opportunity for eyeball QSO's. Directions can be found on the K8LTG Repeater (145.370) See you there!

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## Marconi, cont

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service. He later formed the Marconi Wireless Telegraph Company. Then in 1901, Marconi demonstrated trans-Atlantic wireless by sending the letter S (dot-dot-dot) from his station in Poldhu, Cornwall to Signal Hill in St. John's, Newfoundland. Marconi went on to become very successful (and rich) selling early wireless services and products and gathering royalties from his patents.

### The Weird Genius Thought Of It First

The real inventor of radio is now considered to be Nikola Tesla. Tesla was born in Croatia, educated in Europe, and eventually immigrated to the US in 1884. Tesla was a genius. He invented so much stuff that it is hard to catalog all of it (much less understand it). This process is still going on today, as Tesla's claims of "death rays" and the transmission of electrical power wirelessly are still being examined. One of his earliest successes was the invention of the AC induction motor. He also helped George Westinghouse defeat Thomas Edison in the battle of AC vs. DC in the electrical power distribution war of the late 1800's. AC eventually won simply because you could step AC up with a transformer and transmit it over long distances then step it back down. This was a more efficient and economic way to transmit power than Edison's DC system, which required many more generation stations close to the customers. Tesla also worked on the first big AC generating plant at Niagara Falls.

In any case, Tesla got the idea for radio back in 1892 and demonstrated a remotely controlled boat in 1898. He did get basic US patents in 1897; these were for single-frequency radio, not spark gap. Yet somehow, he never got recognition for this work. While Marconi took the basic idea and ran with it, Tesla was always on to something new. Once he invented something, his overly active mind had him creating some other fabulous new invention. So Marconi and others got all of the credit...and the money. Tesla's big shot at wireless glory was the

*(Continued on page 3)*

## Meetings

The Alliance Amateur Radio Club meets on the First Wednesday of every month, in conference room 1A on the west end of the Café in the new Alliance Community Hospital. Talk-in is on 145.37 @. Meetings begin at 7:30 PM. Visitors are always welcome.

## Nets

Thursday is our "net night," with the following nets on tap:

### Ten meters

CW @ 8PM on 28.400 MHz  
SSB @ 8:30PM on 28.400 MHz

### 2 meters

9 PM on 145.37 MHz

## Internet

If you'd like to check us out on the web, our E-mail address is:

**w8lky@w8lky.org**

## Newsletter Information

The Zero Beat is a publication of the Alliance Amateur Radio Club, P.O. Box 3344, Alliance, OH 44601

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You can submit material to the Zero Beat either electronically, to ke8ve@alliancelink.com, in person, or via snail mail. I can read most word processor formats, but prefer your files to be in straight text, E-mail, or Microsoft Word format.

## January Minutes

### ALLIANCE AMATEUR RADIO CLUB

**January 3, 2007**

The regular meeting of the Alliance Amateur Radio Club was held at the Alliance Community Hospital on January 3, 2007 at 7:30 PM with club President Joe Young, KC8TAC, presiding. The Pledge of Allegiance was recited, followed by introductions. There were 17 members and 1 guest present, with the club welcoming Miriam Sanor. The meeting was held in the cafeteria instead of the usual conference room due to a conflict with a hospital meeting.

For the secretary's report Don, AB8KV noted that the December minutes were in the newsletter and that information on the Amateur Radio scholarships from the Foundation for Amateur Radio was still available. The secretary's report was approved on a motion from Bob, K8RLS and seconded by Jim, N8XTJ.

Mary Ann, KB8IVS gave the treasurer's report. The treasurer's report was accepted on a motion by Howard, K8DXR and seconded by Larry, KE8VE.

#### Old business:

---President Joe asked for

comments about the Christmas party. There were a number of responses, with the comments being generally favorable.

#### New Business:

---George, K3GP noted that the 2006 Field Day results had been published in QST. There was a discrepancy between the club's published score and the score that was submitted. George said he was looking for an explanation for the difference. Joe noted that for the last VHF contest, logs were available to check the posted results against the submittals, with this being a good idea for Field Day results.

---The Tusco hamfest is scheduled for January 28, and the Mansfield hamfest is set for February 11.

---Frank, WA8WHP reported that a relatively new club in Ravenna (PCARS) was planning a QRP field day.

---Don, K8OMO and Tony, KD8BBK announced that a breakfast for any interested hams in the area was being held on January 20 at 9 AM, at Thompson's Dairyland.

With no further business, President Joe adjourned the meeting at 7:55 on a motion from Dave, N8NLZ, seconded by Don, AB8KV.

Minutes respectfully submitted by Don, AB8KV, secretary.

### Marconi

*(Continued from page 2)*

worldwide radio transmission system he invented and built at Wardenclyffe on Long Island. A huge tower was built, along with most of the apparatus, to make it work. But he ran out of money and went bankrupt. Everyone else got the glory.

Tesla was a certified genius, but he was a terrible businessman. While he lived comfortably for most of his life, he never got rich. Yet he did make many others very rich. He died penniless in 1943, eight months before the U.S. Supreme court threw out all other radio patents and granted them to Tesla. Reading the whole history of wireless today, it is easy to see that Tesla was really the father of radio.

#### **The Rest Of The Story**

As with any technology, lots of people are involved in creating and developing it. That is certainly true of wireless. So while Tesla should really get the credit for the concept, we have many others to thank for their work, especially Marconi. After that early work, Edison invents the light bulb (along with Swan of England), Fleming creates the first vacuum tube diode in 1904, and Lee DeForest then develops the first triode tube in 1907. Once we got the tube, amplification made radio even better. Fessenden creates amplitude modulation in 1906 and by the 1920's there are hundreds of radio stations on the air in the U.S. alone. Armstrong invents FM in 1933 and commits suicide after RCA steals his patents. Then comes the transistor in 1947 and the integrated circuit in 1957-1958, thanks to Jack Kilby of Texas Instruments and Robert Noyce of Fairchild and later Intel. And here we are today. I wonder if Tesla or Marconi would even recognize our current versions of wireless, advanced as they are.

In any case, thanks guys. We owe you our careers.

## THE WAYBACK MACHINE

ISSUE #35

by **Bill Continelli, W2XOY**

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Over eight years ago, I started the "Wayback" columns. At first, they were designed to be fillers in the Schenectady Museum Amateur Radio Association's newsletter, but soon, they took on a life of their own, thanks to the Internet, and "This Week in Amateur Radio" where the columns were translated into 10 minute "broadcasts", sent out over 100 repeaters nationwide. After writing Wayback #34 in early 2003, I prepared the research for #35 then, for some unexplained reason, took a prolonged break. I knew I would come back, I just wasn't sure when. Two separate incidents brought me back. The first was the subtle (and not so subtle) pressure from two of my most faithful newsletter editors, who have run each and every "Wayback". (Thank you Marian and Ken). The second was the present day activity in southwest Washington State, where the possibility exists of a repeat of events that occurred in 1980.

On March 27, 1980, smoke and ash began pouring from Mount St. Helens, a supposedly dormant volcano in southern Washington. Scientists were unsure if this was just a prelude to a major eruption, but they weren't going to take any chances. Monitoring stations, equipped with scientific instruments, were set up around the mountain. The Washington State Department of Emergency Services sprang into action. RACES was activated, and hundreds of amateur radio operators, through HF and VHF RACES and ARES nets, began helping the geologists and scientists. Hams acted as scientific observers, as well as communications operators from numerous remote locations, transmitting information on the volcanic tremors, as well as the amount of smoke and ash venting from the mountain. A few days after the March 27 activity, the mountain once again became somewhat dormant, and the amateur operations were scaled back.

Then suddenly, without warning, at 8:32 am on Sunday, May 18, 1980, Mount St. Helens literally blew up. The top 1300 feet of the mountain was blown apart by an explosion inside the mountain which had the force of a 10 megaton atomic bomb. Volcanic ash was

thrown 60,000 feet into the air. The top part of the mountain came down the side of the volcano, crushing and destroying everything in its path for miles.

Over 10 miles away, Jerry Martin, W6TQF, was at his observation post, "Coldwater 2". He was the first to see the explosion, and he transmitted the first warnings, which activated the state DES. Ominously, contact with W6TQF was lost just a few minutes after his warning. More ominously, no one had heard from Reid Blackburn, KA7AMF, who was much closer to the volcano. He had been killed by the hot volcanic ash that buried his location. As for W6TQF, his observation post was destroyed by the explosion, ash and mudflows.

Meanwhile, a massive cloud of volcanic ash from the eruption began drifting towards populated areas, raining ash and lightning in an ever increasing path. Amateur radio nets on 147.06, 3.987, and 3.940 MHz relayed wind direction and ash-fall information to towns in the cloud's path. Amateur Radio became the key communications link during the next few days, as the first cloud eventually drifted to the East Coast.

But it wasn't over.

Exactly one week later, at 2:49 AM, on Sunday, May 25, 1980, Mount St. Helens erupted again. This time the ash drifted northwest, towards the ocean beaches. Hundreds of Memorial Day vacationers evacuated to escape the ash fallout. Amateur Radio operators kept the Washington State DES headquarters informed of the mountain's actions. Hams also kept County emergency services offices informed about the path of the second ash cloud. Local officials used the amateur radio data to plan evacuations, or other necessary activities.

But it still wasn't over.

On Thursday, June 12, 1980, at 9:11 PM, Mount St. Helens erupted for a third time. This time, the ash drifted southwest over Portland, Oregon, closing the airport. Again, Amateur Radio operators provided information regarding the eruption and the path of the ash cloud.

In the end, over 300 hams were active, passing reports,

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# February 2007

*Birthday Greetings: KA8LKQ, AB8KV, N8FCL, W8WEN*

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<b>11</b> <b>Mid-Winter Hamfest, Mansfield</b> North American Sprint, CW	<b>12</b> ARRL School Club Roundup <div style="border: 1px solid black; padding: 2px;">             Columbiana Cty. Train. Net 8 pm           </div>	<b>13</b> <div style="border: 1px solid black; padding: 2px;">             Canton ARES Net 7pm 147.12           </div> <div style="border: 1px solid black; padding: 2px;">             N. Col. Cty. ARES Net 9pm-147.255           </div>	<b>14</b> AGCW Semi-Automatic Key Evening <div style="border: 1px solid black; padding: 2px;">             Carroll Cty Net 0100 UTC 147.075           </div> NAQCC Straight Key/Bug Sprint RSGB 80m Club Championship, Data	<b>15</b> <div style="border: 1px solid black; padding: 2px;"> <b>AARC Nets</b>  <b>8:00, 8:30,</b>  <b>9:00</b> </div> <div style="border: 1px solid black; padding: 2px;"> <b>QCWA Net</b>            7:30         </div>	<b>16</b> <div style="border: 1px solid black; padding: 2px;">             Massillon Net 8pm 147.18           </div>	<b>17</b> ARRL Inter. DX Contest, CW																																																																																				
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*Amateur radio - when all else fails ...*



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Alliance, OH 44601

## WAYBACK MACHINE

*(Continued from page 4)*

mountain observations, and data to emergency service offices around the state. Almost 3000 messages were passed via Amateur Radio. And let us never forget that two Amateur Radio operators, Jerry Martin, W6TQF, and Reid Blackburn, KA7AMF, made the ultimate sacrifice in providing public service to their fellow man.

In our next installment, we will go back 20 years, and look at the events of 1984. I hope you can join me.

(Information for this article was obtained from the July and August, 1980, issues of QST).

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**Editor's Note:** At the present time, this is the last episode of the **Wayback Machine**. The article alluded to here hasn't been written yet. I'm sure most of you have enjoyed reading it as much as I have.

## QCWA Meeting

QCWA, Chapter 21, Newsletter and Meeting Notice for February 17, at Noon, at the Hometown Buffet, 4758 Everhard Road, N. W., Canton, Ohio.

Please go to [www.cmh.net/qcwa](http://www.cmh.net/qcwa) for the details and directions.

Please click REPLY now to make your reservations by Thursday, February 15, to Dave Glass [w8ukq@juno.com](mailto:w8ukq@juno.com), or call 330-823-4855.

Dave Glass W8UKQ, Secretary

## Acknowledgements

The Editor would like to thank Don, AB8KV, John, KD8MQ, Dave, W8UKQ for submitting articles and information, and special thanks to Bob, K8RLS, who has provided the calendar for the past 5 years.