

The Invention of the Telegraph

by

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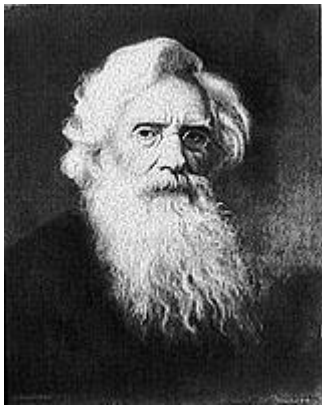


The Invention of the Telegraph

Before Samuel Morse electrically transmitted his famous message “What hath God wrought?” there were also signaling systems that helped people communicate over long distances. These communication systems included mostly flags or lights. In the eighteenth century, such systems used an observer who would decipher a signal from a high tower on a distant hill and then send it on to the next station. In fact, these systems were not useful, effective, and also took long periods of time. Thus, the United States wanted a system that would be more useful and effective. A prize for a working proposal was offered. The framers of this legislation had no way of knowing that when they used the word "telegraph" to refer to this visual semaphore system, they would be offered an entirely new and revolutionary means of communication through electricity.

Samuel Finley Breese Morse, around 1840, invented the Morse system of telegraphy, in the USA. The Morse code is essentially a simple way to represent the letters of the alphabet using patterns of long and short pulses. Assigning a unique pattern to each character of the alphabet, and numbers- 0 to 9-, short and long pulses were created. These pulses are translated into electrical signals by an operator using a telegraph key, and electrical signals are translated back into the alphabetic characters by a skilled operator.

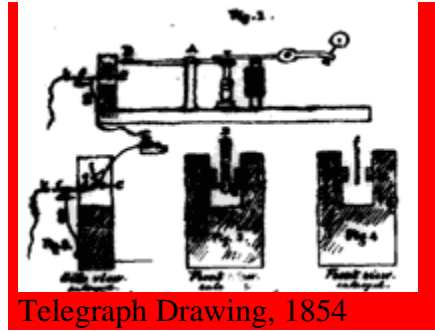
The idea of using electricity to communicate had occurred to Morse during a conversation while travelling on a ship. When he returned from Europe in 1832, he heard about Michael Faraday’s new invention on electromagnets. Morse understood how it worked, he thought that it might be possible to send a coded message over a wire. He then proved that



signals could be transmitted by wire when he was a professor of arts and design at New York University in 1835. He used pulses of current to deflect an electromagnet, which moved a marker to produce written codes on a strip of paper, which led to the invention of Morse code. The following year, the device was modified to emboss the paper with dots and dashes. In fact this original code has many similarities to the one used today and it was used for several years before the need arose for it to be changed. The partners realized that they had to interest the large organizations and government institutions if their idea was to succeed. They gave demonstrations to the American Congress in 1838 and funded \$30,000 to construct an experimental telegraph line from Washington to Baltimore, a distance of 40 miles.

Six years later, members of Congress witnessed the sending and receiving of messages over part of the telegraph line. Before the line had reached Baltimore, the Whig party held its national convention there, and on May 1, 1844, nominated Henry Clay. This news was hand-carried to Annapolis Junction (between Washington and Baltimore) where Morse's partner, Alfred Vail, wired it to the Capitol. This was the first news dispatched using the electric telegraph.

The message, "What hath God wrought?" sent later by "Morse Code" from the old Supreme Court chamber in the United States Capitol to his partner in Baltimore, officially opened the completed line of May 24, 1844. Morse allowed Annie Ellsworth, the young daughter of a friend, to choose the words of the message, and she selected a verse from Numbers XXIII, 23: "What hath God wrought?" which was recorded onto paper tape. Morse's early system produced a paper copy with raised dots and dashes, which were translated later by an operator.



Telegraph Drawing, 1854

This sentence was written from Washington

First telegraph message, 24 May 1844

With this system operating, interest grew very fast. Many of the railroad companies saw the possibilities of the new system and they started to have systems installed. In fact after only four years more than 5000 miles of line had been put up. In addition to this, orders soon started to come in from Europe as they heard about the system and how successfully it performed. With all of these orders Morse became very wealthy.

Even though the original code that Morse had derived spread over the world, it had some limitations. Some letters had pauses in them, others had dashes that were longer than others, and there was no provision for accents required by some European languages. These problems meant that the code was not always easy to use. Therefore, a new code, which would be easy

to use and had no problems as the original one, had to be invented. The new code came in 1851. This code did not have limitations as the original one and was easy to use. Actually, it had many similarities to the old one. It included also no spaces in the letters and standard lengths for all the dots and dashes. In fact, this code is called the International Morse Code and it is the one that is used today.

1 st mode.	1	2	3	4	...

2 ^d mode.	1	2	3	4	5
3 ^d mode.	1	2	3	4	5
	∨	W	WW	WWW	WWWW
4 th mode.	1	2	3	4	5

The dots and dashes system of telegraph transmission, which became known as the Morse code, came into being once Morse began his collaboration with Alfred Vail. One of its earliest versions is seen here in the bottom line titled "2d For Letters."

A .-	N -.	0 -----
B -...	O ---	1 .----
C -..	P .-. .	2 ..---
D -..	Q --.-	3 ...--
E .	R .-. .	4-
F ..-	S ...	5
G --.	T -	6 -....
H	U ..-	7 --...
I ..	V ...-	8 ----.
J .---	W .--	9 ----.
K -.-	X --.-	Fullstop .-.-.-
L .---	Y -.-	Comma -.-.-
M --	Z --..	Query ..-.-.

An early form of the Morse code (or alphabet)

References:

- 1) <http://memory.loc.gov>
- 2) <http://inventors.about.com>
- 3) <http://www.morsehistoricsite.org>