



THIS DAY IN HISTORY

STUDY GUIDE



MAR. 7, 1876: ALEXANDER GRAHAM BELL PATENTS TELEPHONE

Biographies, discussion questions, suggested activities and more



THE PHONE

Setting the Stage

Today, billions of telephones around the world make it possible to hear anyone's voice almost anywhere in the world at any time. This was not always the case. Before the invention of the telephone, exchanging letters and notes was the most common form of private communication between people. Of course, it was far from efficient, even after the advent of modern post offices standardized and sped up mail delivery. The invention of the telegraph by Samuel Morse drastically improved people's ability to communicate over long distances quickly. It worked by transmitting electrical signals over a wire laid between stations. In addition to helping invent the telegraph, Samuel Morse developed a code (bearing his name) that assigned a set of dots and dashes to each letter of the English alphabet, allowing for the simple transmission of complex messages across telegraph lines. Morse sent the first telegraph message in 1844 and by 1861, the Western Union telegraph company had made it possible to send messages across the United States via the first transcontinental telegraph line. By 1866, a telegraph line was laid across the Atlantic Ocean, allowing messages to be sent between the United States and Europe. However, telegraphs were hardly meant for daily or frequent communications--their transmission was slow compared to the telephone and today's email, and each message was manually typed out in Morse Code, which made long or complicated messages slower and more expensive to transmit. By the end of the 19th century, new communication technologies, including the telephone, began to emerge, many of them based on the same principles first developed for the telegraph system. In time, these new technologies would overshadow the telegraph, which has fallen out of regular usage.

Cover Photo: Alexander Graham Bell placing the first New York to Chicago telephone call, 1882.

MAR. 7, 1876

ALEXANDER GRAHAM BELL PATENTS TELEPHONE



Bell's telephone in use c. 1877.

On March 7, 1876, 29-year-old Alexander Graham Bell received a patent for his revolutionary new invention—the telephone.

The Scottish-born Bell worked in London with his father, Melville Bell, who developed Visible Speech, a written system used to teach speaking to the deaf. In the 1870s, the Bells moved

to Boston, Massachusetts, where the younger Bell found work as a teacher at the Pemberton Avenue School for the Deaf. He later married one of his students, Mabel Hubbard.

While in Boston, Bell became very interested in the possibility of transmitting speech over wires. Samuel F.B. Morse's invention of the telegraph in

1843 had made nearly instantaneous communication possible between two distant points. The drawback of the telegraph, however, was that it still required hand-delivery of messages between telegraph stations and recipients, and only one message could be transmitted at a time. Bell wanted to improve on this by creating a “har-

monic telegraph,” a device that combined aspects of the telegraph and record player to allow individuals to speak to each other from a distance.

With the help of Thomas A. Watson, a Boston machine shop employee, Bell developed a prototype. In this first telephone, sound waves caused an electric current to vary in intensity and frequency, causing a thin, soft iron plate—called the diaphragm—to vibrate. These vibrations were transferred magnetically to another wire connected to a diaphragm in another, distant instrument. When that diaphragm vibrated, the original sound would be replicated in the ear of the receiving instrument. Three days after filing the patent, the telephone carried its first intelligible message—the famous

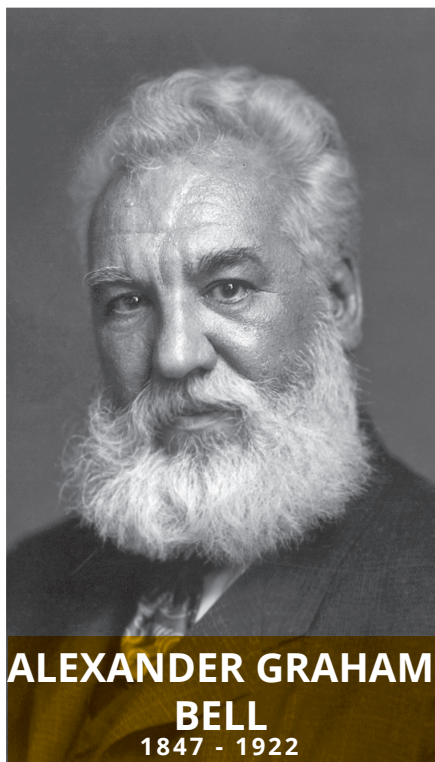
“Mr. Watson, come here, I need you”—from Bell to his assistant.

Bell’s patent filing beat a similar claim by Elisha Gray by only two hours. Not wanting to be shut out of the communications market, Western Union Telegraph Company employed Gray and fellow inventor Thomas A. Edison to develop their own telephone technology. Bell sued, and the case went all the way to the U.S. Supreme Court, which upheld Bell’s patent rights. In the years to come, the Bell Company withstood repeated legal challenges to emerge as the massive American Telephone and Telegraph (AT&T) and form the foundation of the modern telecommunications industry.

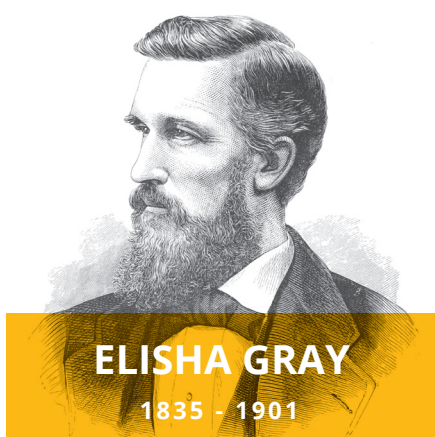
DID YOU KNOW?

At the moment when Alexander Graham Bell was lowered into his grave in 1922, all telephone service in the U.S. and Canada was suspended for a full minute. An army of 60,000 telephone operators stood silently at attention and did not connect any new calls to the continent’s 13 million telephones.

PEOPLE TO KNOW

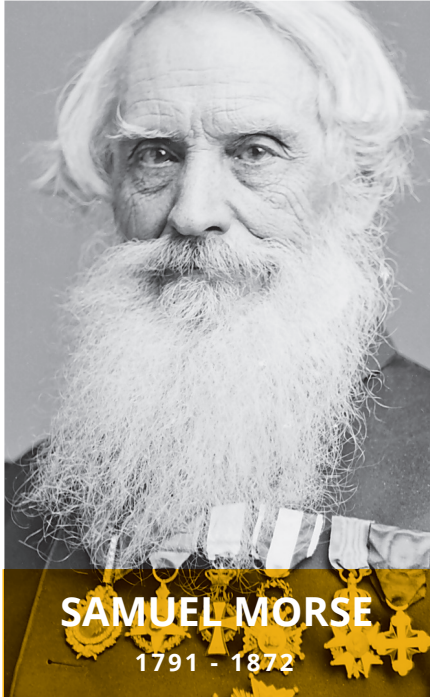


Bell, born in Edinburgh, Scotland, in 1847, was the son of Alexander Melville Bell, a leading authority in public speaking and speech correction. The young Bell was trained to take over the family business, and while still a teenager he became a voice teacher and began to experiment in sound. In 1870, his family moved to Canada, and in 1871 Bell went to Boston to demonstrate his father's method of teaching speech to the deaf. The next year, he opened his own school in Boston for training teachers of the deaf and in 1873 became a professor of vocal physiology at Boston University. In his free time, Bell experimented with sound waves and became convinced that it would be possible to transmit speech over a telegraph-like system. He enlisted the aid of a gifted mechanic, Thomas Watson, and together the two began trying to convert Bell's ideas into practical form, which they did in 1876. Bell continued his experiments in communication, inventing the photophone, which transmitted speech by light rays, and the graphophone, which recorded sound. He continued to work with the deaf, including the educator Helen Keller, and used the royalties from his inventions to finance several organizations dedicated to the oral education of the deaf. In addition to his work on the telephone, Bell developed a forerunner of the iron lung; built the airplane that made the first powered flight in Canadian history; and served as president of the National Geographic Society. He died in 1922 at his summer home and laboratory on Cape Breton Island, Canada.



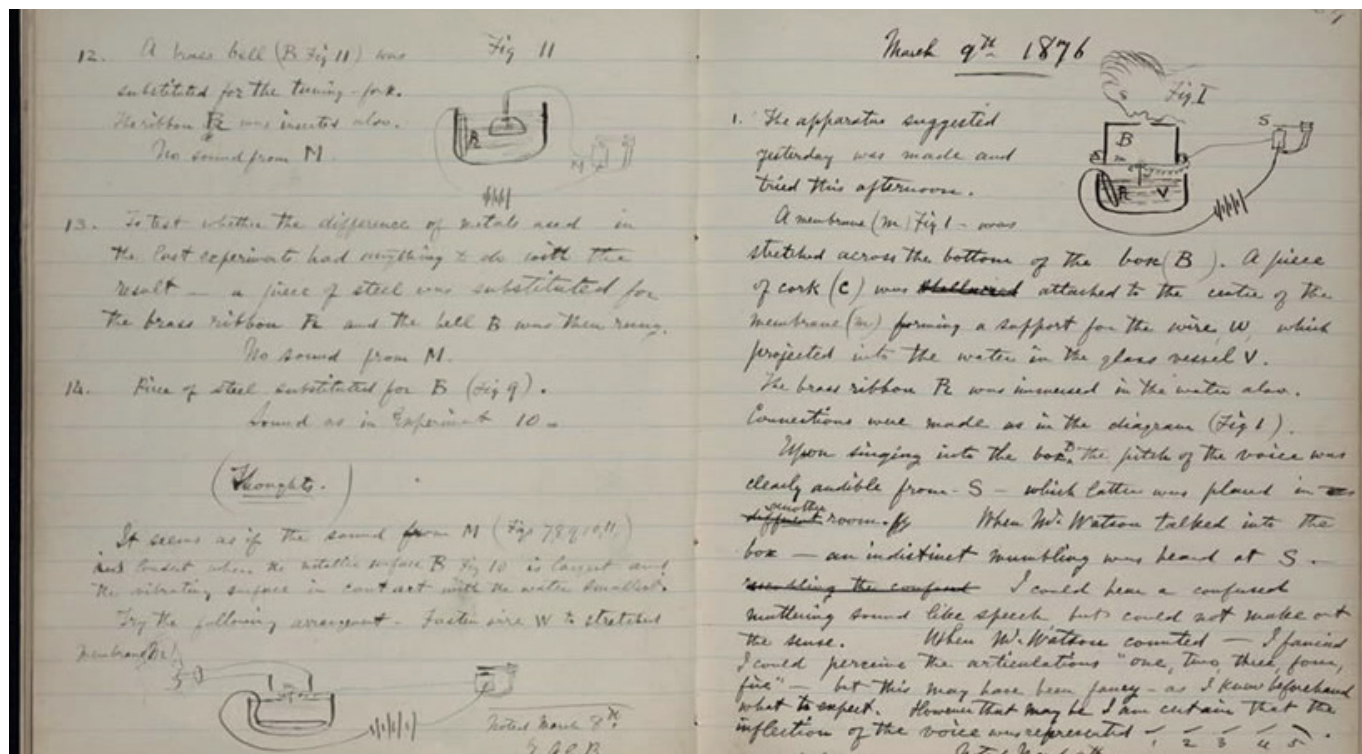
Born in Ohio, Gray began tinkering with electrical devices while studying at Oberlin College. He went on to have a career as an inventor and electrical engineer, inventing several devices that improved upon the telegraph and, with a partner, founding the Western Electric Company. Gray developed a telephone at virtually the same time as Alexander Graham Bell: In fact, on February 14, 1876—the same day Bell's attorney filed for his telephone patent, Gray's lawyer filed paperwork explaining his intention to file for a telephone patent within three months. Bell's telephone used a "liquid transmitter," which was described in Gray's paperwork but not in Bell's. In the ensuing years, there were accusations of thievery, and Bell and Gray engaged in an intense legal battle over who was the true inventor of and patent holder for the telephone; Bell was eventually awarded the patent.

PEOPLE TO KNOW



Morse, a native of Massachusetts, attended Yale University, where he was interested in art, as well as electricity, which was still in its infancy at the time. After college, Morse became a painter. In 1832, while sailing home from Europe, he heard about the newly discovered electromagnet and came up with an idea for an electric telegraph. He had no idea that other inventors were already at work on the concept. Morse spent the next several years developing a prototype and took on two partners, Leonard Gale and Alfred Vail, to help him. In 1838, he demonstrated his invention using Morse code, in which dots and dashes represented letters and numbers. In 1843, Morse finally convinced a skeptical Congress to fund the construction of the first telegraph line in the United States, from Washington, D.C. to Baltimore. In May 1844, Morse sent the first official telegram over the line, with the message: "What hath God wrought!" Over the next few years, private companies, using Morse's patent, set up telegraph lines around the northeast. In 1851, the New York and Mississippi Valley Printing Telegraph Company was founded; it would later change its name to Western Union. In 1861, Western Union finished the first transcontinental line across the United States. Five years later, the first successful permanent line across the Atlantic Ocean was constructed and by the end of the century telegraph systems were in place in Africa, Asia and Australia.

SEE IT



A page from Alexander Graham Bell's notebook



Alexander Graham Bell and his family, 1885

SEE IT



Bell's telephone patent

CONCURRENT EVENTS



KENTUCKY DERBY

On May 17, 1875, the first-ever Kentucky Derby was run. Thousands of eager horse racing fans poured through the gates of Churchill Downs to get their first looks at Louisville's sparkling new racetrack and cheer on the thoroughbreds in the featured race, the inaugural Kentucky Derby. Finely dressed gentlemen and ladies adorned in bright colors thronged the grandstand and hundreds of carriages filled the infield as the horses toed the line for the day's second race. At the tap of a drum, 15 horses thundered down the track. As excited shouts echoed across the oval, jockey Oliver Lewis spurred on his chestnut colt Aristides to a one-length victory in the fastest time ever recorded by a three-year-old horse. Lewis, along with 13 of the 15 riders in the first Kentucky Derby were African Americans. In the years following the Civil War, black jockeys dominated horse racing at a time when it was America's most popular sport. African-American riders were the first black sports superstars in the United States, and they won 15 of the first 28 runnings of the Kentucky Derby.



BATTLE OF LITTLE BIGHORN

The Battle of the Little Bighorn, fought on June 25, 1876, near the Little Bighorn River in Montana Territory, pitted federal troops led by Lieutenant Colonel George Armstrong Custer against a band of Lakota Sioux and Cheyenne warriors. Tensions between the two groups had been rising since the discovery of gold on Native American lands. When a number of tribes missed a federal deadline to move to reservations, the U.S. Army, including Custer and his 7th Cavalry, was dispatched to confront them. Unaware that the number of Indians fighting under the command of Sitting Bull approached 3,000, Custer and his 200 men were all killed in what became known as Custer's Last Stand. Little Bighorn was the most decisive Native American victory in the long Plains Wars. Within five years, however, almost all of the Sioux and Cheyenne would be confined to reservations.



EDISON'S PHONOGRAPH

In November 1877, American inventor Thomas Edison announced his invention of the phonograph, a way to record and play back sound. Edison stumbled upon the invention while working on a way to record telephone communication at his laboratory in Menlo Park, New Jersey. His work led him to experiment with a stylus on a tinfoil cylinder, which, to his surprise, played back the short song he had recorded, "Mary Had A Little Lamb". Public demonstrations of the phonograph made the inventor world famous, earning him the nickname "Wizard of Menlo Park." Edison set aside this invention in 1878 to work on the incandescent light bulb, and other inventors moved forward to improve on the phonograph. In 1887, Edison resumed work on the device, using the wax-cylinder technique developed by Charles Tainter. Although initially used as a dictating machine, the phonograph proved to be a popular tool for entertainment. Edison, who acquired an astounding 1,093 patents in his 84 years, died in 1931.

DISCUSSION QUESTIONS



Thomas Watson holding a model of Bell's first telephone, 1931

1

In what ways do you think the telephone changed daily life for ordinary people?

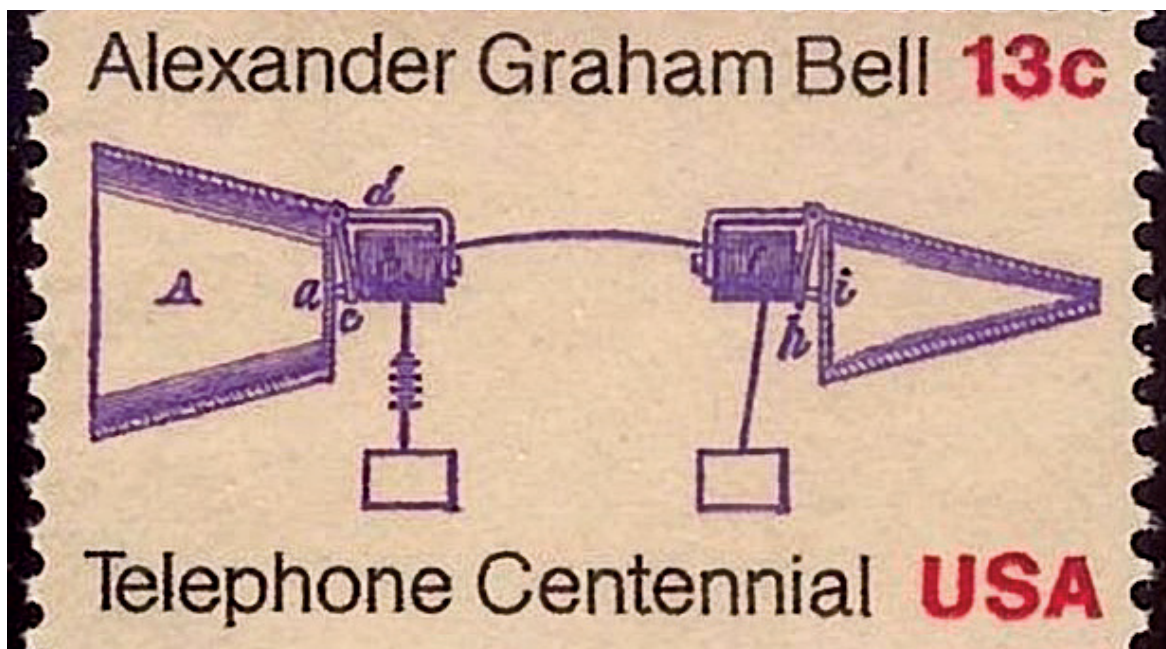
2

How do you think the telephone affected governments and diplomatic relations between countries?

3

Do you think it's possible to attribute an invention to just one person?

SUGGESTED ACTIVITIES



Telephone centennial stamp, 1976

TALK THE TALK

Letters often provide valuable insight for historians as they investigate historical figures and events. Often, no such records of phone calls exist. Ask students to imagine how a phone call might have gone between two historical figures and write a “transcript” for the call. Potential subjects might include historical figures key to the same historical event (Cleopatra and Julius Caesar, Gavrilo Princip and Archduke Ferdinand, President John F. Kennedy and Soviet Premier Nikita Khrushchev) or figures in different fields or eras (Marie Curie and Amelia Earhart; Marco Polo and Leif Eriksson, Joan of Arc and Emmeline Pankhurst).

HYPOTHETICAL HISTORY

How might history have been different if the telephone had been invented earlier? Ask students to imagine a historical event that occurred before 1876, and how that event might have turned out differently if the parties involved had been able to easily and quickly communicate via telephone. Then, ask students to compare what actually happened to what they think might have happened differently if a telephone had been used.

WALK OF PROGRESS

Ask each student to pick an invention or key development that has been significant to human progress over the course of history, ranging from fire and the wheel to the personal computer and the internet. Have each student create a visual presentation of their invention, and include information on who invented or developed it; how it came to be invented; and its significance. (This list may have to be modified for earlier inventions.) Then, ask students to display their work chronologically along a “walk of progress.” As a follow-up assignment, students can take the “walk,” choose which invention they deem the most important and write a short essay defending their choice.

RESOURCES

Audio: Alexander Graham Bell's Early Recordings

<http://www.history.com/topics/inventions/alexander-graham-bell/speeches>

Audio: First telephone call sent around the world

<http://www.history.com/topics/inventions/alexander-graham-bell/speeches/first-telephone-call-sent-around-the-world>

Website: Everyday Mysteries: Who invented the telephone? (Library of Congress)

<https://www.loc.gov/rr/scitech/mysteries/telephone.html>

Website: Primary Sources from the Digital Public Library of America

<https://dp.la/primary-source-sets/sets/the-invention-of-the-telephone/>

Website: The First Telephone Call, Library of Congress

http://www.americaslibrary.gov/jb/recon/jb_recon_telephone_1.html

Website: History of the Telephone, ITPA

<http://www.nationalitpa.com/history-of-telephone>