

# Composite Timeline

## Wireless – Jack Gray – DIT/VTI

**1832** In October, Samuel F. B. Morse was returning to the United States from a three-year stay in Europe via the ship Sully. On October 19, Dr. Charles T. Jackson of Boston was talking on the science of electricity, with demonstrations. His demonstration of the electromagnet and the speed of electricity in a conductor gave Morse the idea of the telegraph and of using a pencil attached to a magnetic clapper to copy the signals. The idea of the dot and dash code was also developed in this year. Before the ship docked in New York, Morse had drawn up an idea for his telegraphy and began work on it almost immediately after arriving home.

**1833** K. F. Gauss and W. E. Weber used a two-wire telegraph line for communications between the observatory and the laboratory at the University of Gottingen. The line was about 8,000 feet long. This was probably the first use of the binary code in telegraphy. Signals were detected by the movement of a magnetic needle. The telegraph was in operation for about five years. Weber realized the future value of the telegraph when he wrote: "When the globe is covered with a net of railroads and telegraph wires, this net will render service comparable to those of the nervous system of the human body."

**1834** Samuel Morse received permission from the B&O Railroad to string four wires along the tracks from Washington to Baltimore. The terminals were to be located in the Supreme Court Chamber of the Capitol, and in the Pratt Street Depot in Baltimore.

**1874** Dodge Institute of Telegraphy formed by George Alexander Dodge, known as The Northern Indiana Normal School and Business Institute, Telegraphy Department.

**1882** George A. Dodge sold his interests in the school to George L. Durand, a practical and competent instructor, who a few years later transferred his share in the department to a Mr. Clarkson, operator of the Grand Trunk railway station. Clarkson discontinued the school, but it was revived by a man named West, operator at the Pennsylvania station. This attempt met with little success and the department was again discontinued.

**1891** George M. Dodge re-established the department of telegraphy, still retaining the former relation with the Normal school, and assumed active control

**1888** Heinrich Rudolf Hertz confirms the existence of electromagnetic radiation aka RF.

**1892** Tesla demonstrates transmission of RF energy.

**1894** G. M. Dodge seceded from the Northern Indiana Normal School and established the Dodge's Institute of Telegraphy as an independent and separate institution.

**1895** Marconi builds wireless system capable of long distance transmission.

**1897** Tesla applies for two U.S. patents.

**1900** the front part of the Dodge Institute of Telegraphy Wire telegraphy building was built and in 1904 the rear part of the same building was added.

**1900** Reginald Fessenden sends weak transmission over airwaves.

**1900** Jack Gray Born in Middletown, Oh

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**1901** Marconi completes first successful transatlantic radio communication.

**1902** The Poulsen-Arc radio transmitter is invented.

**1904** REVERSAL OF FORTUNE, The U.S.A. patent office reverses the patent awarded to Tesla and awards Marconi with the patent for the invention of the radio.

**1905** FLEMING VALVE, John Fleming invents the vacuum tube diode that later helps Lee deForest create the three-element vacuum tube called the Audion. The Audion is considered one of the most important developments in the history of electronics.

**1906** Fessenden uses an Alexanderson alternator and rotary spark plug transmitter to make the first radio audio broadcast

**1909** Dodge Institute of Telegraphy (Paul Godley) adds department of department of wireless telegraphy and wireless engineering including a three-kilowatt wireless telegraph station, the largest and most complete station for the instruction of wireless telegraphy in the U.S.A.

**1910** Dodge Institute of Telegraphy The wireless building (East of the wire building) was erected together with the boarding hall.

**1912** The Wireless Ship Act requires all U.S. ships traveling over 200 miles off the coast of the USA to be equipped with wireless radio

**1912** Jack Gray develops an Interest in wireless

**1914** DTI receives experiential license 9XD

**1914** Edward Howard Armstrong patents the regenerative circuit

**1917** Jack Gray attends the Dodge Institute of Telegraphy, first 2-way wireless contact

**1917** Jack Gray worked for Marconi Co. as a Shipboard wireless operator

**1918** Jack Gray attends the Great Lakes Naval Radio School, Harvard Naval Radio School.

**1918** Edward H. Armstrong patents the super-regenerative circuit.

**1919** Jack Gray attends the Ohio Mechanics Institute Cincinnati.

**1919** The government releases its control of all patents, the Radio Corporation of America (RCA) is established.

**1919** Precision Equipment Co. was a boutique radio shop that consisted of men working around tables of parts to build radios. Ace brand of radios was named after World War I flying aces.

**1919** Conceived in 1919 and operated in February 1920 by the Precision Equipment Company, Cincinnati, Ohio, they became the first Radiocast Station in the USA. Under call

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sign 8XB and later WMH, they were the first station specifically designed and operated for the express commercial purpose of broadcasting useful and entertainment matter for the benefit of the Radio public of the United States. By November 1920, KDKA in Pittsburgh was on the air.

**1920** Jack joined The Precision Equipment Co., acquired ham radio license 8ARP, (later W8JDV) attends University of Cincinnati.

Precision's most important asset was acquired in 1920—a license to build regenerative radios. Howard Armstrong patented the regenerative circuit in 1914. In a day that a one tube radio was an expensive item, the regenerative circuit made the best use of that single tube. Regenerative radios performed better than any other circuit of similar sophistication and cost. In 1920 Armstrong offered licenses to interested parties. About twenty companies jumped on the offer. Soon afterward Westinghouse bought Armstrong's patent and froze the sale of licenses. Westinghouse then joined RCA which aggressively protected its intellectual property, including the regeneration patent. This put Precision and the other licensees in an enviable position. They could not transfer their licenses to another company, but they could produce regenerative radios until RCA figured a way to scare them out of the business

**1921** Powel Crosley enters the radio business with the 1921 Harko (Hark) Crystal Receiver selling for \$7.00

**1921** July 1921 Powel Crosley Jr. added a transmitter to the company to become a broadcaster and got a license on July 1, 1921 for station 8XAA. The transmitter was a 4-tube 20-watt model.

**1921** Crosley sold radios for \$7 starting in 1921 (1921-1932.)

**1921** President Hoover banned amateurs from broadcasting/radiocasting.

**1922** Edward H. Armstrong patents the super heterodyne receiver.

**1922** March, Crosley received a limited commercial license (#62) for 50 watts from President Hoover and the Department of Commerce for broadcast on 360 meters with the call sign WLW - to be shared with Precision Audio license #29 (December 31, 1921), WMH.

**1922** Crosley now making 500 Radios/day, (WLW increases to 1000 Watts.)

**1922** Precision was struggling. They may have had a valuable license, but their small-shop method of building radios was not competing well with the radio factories popping up around the country. Crosley heard about their troubles and quickly purchased Precision for access to the regeneration patent. Of course, the patent was not transferable, but Crosley circumvented that problem by keeping Precision in business if only on paper. The radios were made by Crosley's factory with Crosley parts, but the name on the front was Precision and Precision's trade name, ACE.

**1922-1925** Atwater-Kent ramps up selling RFTA Radios. Refused to use the regenerative circuit.

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**1923** The Radio Act of 1927 re-assigns stations to clear frequencies and makes radio stations operate in the public interest.

**1924** RCA sells first superhetrodyne patented Edward H. Armstrong

**1924** Crosley integrates The Precision Equipment Co. into Crosley Radio Co. and builds 5,000 radios/day. "The Henry Ford of Radio."

Once in control of an Armstrong license, Crosley renamed the combined company the Crosley Radio Corp. in 1924 and purchased a large manufacturing plant which he equipped to produce 5000 radios per day, including on-site manufacture of many of the basic components as well as the cabinets. Crosley borrowed low-cost high-volume manufacturing concepts from the automotive industry, which earned him the title of "The Henry Ford of Radio."

**1924** Crosley buys DeForest Radio Ltd. Canada (not DeForest Radio, New Jersey) to obtain their patent pool and to gain a position for favorable terms to the RCA patent pool.

**1924** Crosley 50, 51, 52; (\$14.50, \$18.50, \$30)

**1925** Crosley Pup Radio - \$9.75

**1926**, Crosley introduced its "Icyball" refrigerator, a kerosene powered refrigerator that could be used in homes without electricity.

**1927** or later, Jack gray attends the Y. M. C. A. Telegraph/Radio School in New York and the Capitol Radio Engineering Institute in Washington, DC.

**1927** Jack transferred to The Crosley Radio Corporation", 1329 Arlington Street, Cincinnati, Ohio, USA. Sometime later he joined the staffs of WLW and WSAI as an engineer and later as the transmitter supervisor for the Voice of America

**1927** RCA introduces AC powered radios eliminating the battery.

**1927-1928** Atwater-Kent sells one million radios/year

**1928** Crosley's sales and profits peaked and Philco replaced Crosley as the low-cost leader.

**1929** 4.5 Million radios manufactured in the USA

**1930** Jack Gray began collecting wireless

**1930** Amateur Radio operators experiment with frequency modulation FM.

**1933** FM invented by Edward H. Armstrong

**1933** Fireside Chats: People turn to the radio for entertainment and comfort during the Great Depression. President Franklin D. Roosevelt becomes the first "radio president."

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**1934** Dr. J. B. Hershman becomes director of all radio courses at Dodge Institute of Telegraphy and opens the department of electronic. At this time the course in marine radio was materially strengthened and additional courses in Radio Engineering and Radio servicing were added.

**1934-1939** Crosley owned radio station WLW in Cincinnati operated at 500 KW.

**1935** Octal base metal envelope vacuum tubes introduced

**1937** First FM Radio Station, W1XOJ, Massachusetts

**1938** INVASION FROM MARS: CBS broadcasts Orson Welles' adaptation of The War of the Worlds on a Halloween episode of the popular show Mercury Theatre on the Air. This caused panic among listeners who thought the alien invasion was real.

**1939** in During WWII, Crosley was a major producer of the "proximity fuze," an important weapon component used to great advantage by the Allies during the war.

**1939** Dr. J. B. Hershman purchased the Dodge Institute

**1941** G. M. Dodge retired from Dodge Institute of Telegraphy and was succeeded as president by Dr. J. B. Hershman. Under Hershman's administration, the Institute quickly expanded in scope and enrollment. During World War II, more than 1,500 soldiers were trained in electronics at the institute in cooperation with the U. S. Army Signal Corps.

**1944** In March the Dodge Institute of Telegraphy name changed to the Valparaiso Technical Institute and become known as VTI or Valpo Tech.

**1943** The U.S. Supreme Court reverses the patent issued to Marconi, helping the U.S. government to avoid paying damages to the Marconi Company for patent use during World War I.

**1945** Crosley Radio was purchased by Aviation Corp. (Avco). Crosley radio and TV products were produced by Avco until 1956.

**1952-53** Jack Gray, Amateur of the Year by the Dayton Hamvention

**1954** Transistor Radio: Regency introduces the pocket transistor radio, the TR-1, which was powered by a standard 22.5V battery.

**1956** Dr. Hershman died from injuries suffered in an auto accident, VTI forged ahead as a leading electronics school in the nation. W. D. A. Peaslee served as the next president of Valpo Tech until his death in 1959

**1959** Peaslee was succeeded by G. Edward Hershman as president of VTI.

**1965** Jack Gray retires from Crosley VOA

**1970** Jack Gray Died

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**1990** Classes in the Fall 1990 session were cancelled because the faculty had retired or quit. Students in the lower semesters lost what investment they had made. Students in the Sixth Semester stood to lose a lot, diplomas and degrees for those who qualified. A meeting was held with these students and several faculty, where an agreement was made that Valpo Tech would rent classroom space, some of the retired faculty would come back and teach, all so that they got legitimate diplomas or degrees.

**1991** April, Valparaiso Technical Institute ended, closing 117 years of operation.