Beginning in the late 1880s, Heinrich Hertz conducted a series of experiments in Germany which proved the existence of radio waves. In the July 6, 1894 The electrician (London) Oliver Lodge, reviewing "The work of Hertz", noted that "Many of the experiments lend themselves to easy repetition, since they require nothing novel in the way of apparatus except what is easily constructed; many of them can be performed with the ordinary stock apparatus of an amateur's laboratory. A few months later, 21 year old Guglielmo Marconi began his historic experiments in his father's Italian state.

Prior to late 1912, there were no laws or regulations restricting amateur radio transm-itters in the U.S. The industrialized northeast quickly became congested with a mixture of competing amateur and commercial stations, and it was the amateur operators who sometimes dominated the airwaves. ~~as recounted in~~ It was ~~the~~ difficult at first for amateur experimenters to find technical information about radio. In Hertzian waves, the Nov, 1901 issue of a mechanical and electrical hobbyist magazine Amateur work included construction information for a simple transmitter and receiver, similar to what Heinrich hertz has used. Over time radio technology became more refined, and an eight-part series beginning in the September, 1916 Popular Science Monthly, How to Become a Wireless Operator by ~~T.M~~ T.M. Lewis, provided detailed plans for constructing a tuned spark transmitter and crystal detector receiver.

* Electro Importing Company → One of the first companies to sell affordable radio equipment to experimenters & amateurs was Electro Importing Co. of New York city, set up in 1904 by Hugo Gernsback, an 18 years old immigrant from Luxembourg. It sold the first complete radio system – including both a simple transmitter and receiver – offered to hobbyists under the name of Telimco Wireless Telegraph Outfits. The electro It claimed to be the largest makers of experimental wireless material in the world. Hugo Gernsback started three magazines – Modern electrics in 1908, The Electrical Experimenter in 1913, and 'Radio Amateur news' in 1919.

The no. of amateur radio enthusiasts expanded ~~in~~ especially in the northeast of U.S.A. Modern electrics in April 1909 noted that hundreds of Amateur experimenters were now active in the new york city area. July 21, 1910 issue of Electrical World, reported, "There are estimated to be not less than 800 amateur stations in chicago" who were practicing a form of self regulation – one rule being "Don't interfere with commercial stations, or one day you will miss your antennae." At this point, national magazines began to help amateurs to organi Modern electrics july 1908 review listed its first 10 members in wireless registry. Jan, 1909 – announced formation of a free 'Wireless association of america which in Jan 1910, claimed 30

* Co. → National electric Signaling Company, Brant Rock
On Dec. 21st, 1906

Prof. Reginald A. Fessenden — the inventor of the system
— 'Alternator-Transmitter"

→ a complete radio transmission and receiving system which could transmit audio

→ Fessenden & his financial backers hoped that AT&T would be so impressed it would buy the rights to the patents which covered the new system.

→ But AT&T reviewed correctly - that Fessenden's system, while revolutionary, was not yet refined enough for commercial telephone service, and so did not purchase the patents.

In 1920 the 1st U.S. telephone link by radio installed at Catalina island, California. And although the equipment used by the Catalina link was based on the same basic principles -- continuous-wave AM signals first developed by Fessenden's 1906 Brant rock station, instead of alternator-transmitters and liquid barreter receivers, the Catalina link would employ vacuum-tube transmitters and receivers, which had been developed in the interim and were much more efficient.

Fessenden had a falling-out with his backers, and eventually left radio work. But the 'alternator-

'Alternator-Transmitters' because of their complexity, high cost & limited range of frequencies, would never be employed by broadcasting stations, but they did make superb longwave radiotelegraph transmitters, and would be used for transoceanic service through the 1940s. In fact, by 1919 the alternator-transmitter patents, with their application for international radiotelegraph service, would be considered so valuable that the question of their ownership triggered the formation of the 'Radio Corporation of America', because for national security reasons the US govt. didn't want the British-owned Marconi Company to gain control of the alternator-transmitter rights.