

Radio Old In Theory But Quite Young In Practice

Tabloid History Of This Young Giant Of World Industry

In theory, radio is old; in practice, it is still very young.

Over eighty years ago Joseph Henry demonstrated at Princeton that under certain conditions electrical effects are oscillatory, or vibratory, and that these oscillatory effects can be transmitted over considerable distance. Others studied these effects. Numerous experiments were conducted.

Decades later, Professors Heinrich Hertz of Germany demonstrated in a striking manner how the discharge of an electrical condenser sets up invisible waves, and how these waves can be detected several feet distant. That was in 1887. Several years later, Professor Righi of Italy undertook the study of Hertzian waves.

In Righi's laboratory there named Guglielmo Marconi, who became intensely interested in the work. He saw the possibility of applying these invisible or Hertzian waves to telegraphy without wires. Soon Marconi was conducting extensive experiments on his father's estate. From a few feet he soon advanced his wireless jumps to miles, using an upright wire and ground connection at the transmitting and receiving ends. From a laboratory experiment, Marconi's efforts passed over to the commercial stage, mainly in England. Year by year Marconi spanned greater distances, while numerous steamships were equipped with wireless apparatus to work in conjunction with land stations. And by 1907, Marconi succeeded in spanning the vast Atlantic, transmitting signals from England to Newfoundland and laying the foundation for world-wide wireless.

Many Pioneers

By this time many scientists

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By this time many scientists and technicians had been attracted to the virgin field of wireless communication. Originally the invention of Gullielmo Marconi, wireless communication now began to represent the combined efforts of many pioneers. Thus an Englishman, Sir Oliver Lodge, Dr. M. I. Pupin, an American and several others, contributed the principle of tuning, without which wireless communication would be impracticable. Another Englishman, Professor Flemming, contributed the basic vacuum tube, which was later developed by the American DeForest and ingeniously applied by the young American student, Armstrong. Vacuum tube improvements owe their conception to many American technicians, led by Dr. Irving Langmuir of the General Electric Research Laboratory. Alexanderson, another American, developed a remarkable generator known as the Alexanderson alternator, which made possible reliable and economical radio communication over great distances.

A variation of wireless telegraphy, first tried out two decades ago by the Danish Poulsen, made it possible to transmit the spoken word instead of the dots and dashes of the telegraph code. Up till the World War, however, wireless telephony was crude and impracticable. But the remarkable technical advances made during the trying days of conflict soon placed wireless telephony on a practical basis. Indeed, the Atlantic was experimentally spanned by wireless telephony in 1915, by placed wireless telephony on a American telephone engineers, and by the end of the war wireless telephony was available for reliable communication over considerable distances and even on aircraft.

Westinghouse Tests

aircraft.

Westinghouse Tests

In 1920 the Westinghouse engineers conducted a series of experiments with wireless telephony from a laboratory in East Pittsburgh. Wireless amateurs, then possessing receivers for the purpose of listening to dot-dash messages, were asked to listen in on the wireless telephone experiments and to report on the quality of transmission. In due course the Westinghouse tests include the transmission of phonograph records; and the novelty of talks and music coming over the air soon caused many laymen to buy and install inexpensive radio receivers. It was just like a vast party line!

And having created a large audience for its experimental transmission, the Westinghouse organization soon felt duty bound to place its experiments on a schedule basis. Singers and speakers were now introduced in place of phonograph music. And radio broadcasting came into existence with a rapidity of growth that stands without parallel. From a single experimental station, radio broadcasting grew to hundreds of stations dotting the entire country; and from the crude phonographic concerts of the early days, radio broadcasting has grown into a national auditorium wherein the talents of the world's greatest artists are presented to an audience running into the tens of millions.

R. C. A. Organized

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In April, 1919, out of the necessity of centralizing America's wireless or radio efforts, and at the invitation of the United States Government, the Radio Corporation of America was formed. This company immediately purchased the property of the British-owned Marconi Company, secured rights under all important radio patents, and quickly placed in commercial service ~~high-power~~ ~~stations~~ ~~connecting~~ across the Atlantic and Pacific oceans to distant lands. Thus came about our American world-wide network which makes New York and San Francisco the centers of radio communication.

With the advent of radio broadcasting, the Radio Corporation of America, in conjunction with its associates, the Westinghouse and the General Electric companies, established a chain of broadcasting stations to serve the American public. Furthermore, vast manufacturing plants were organized and set into production on radio receiving sets and vacuum tubes to meet the tremendous demand which had been created.

Broadcasting, now five years old, has brought about the giant radio industry from the original hobby of a few scientists, with a total annual business of less than \$6,000,000, to a business in 1925 of more than \$500,000,000! It is estimated that over 3,000,000 radio sets have been sold in 1925, together with 20,000,000 tubes! The radio industry now employs about 300,000 persons in the 1,200 manufacturing

plants and 40,000 dealers' stores, nearly all of which have come into existence in the last five years!