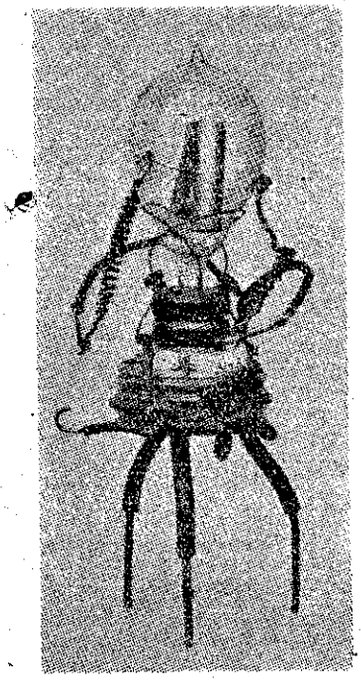
MARCONI relates HOW WIRELESS BEGAN

Senatore Marchese Marconi, probably the best known figure in radio history recently told in his own words from the B.B.C. the thrilling story of how radio began. Through the courtesy of "The Listener" we are able to reproduce in full that remarkable talk.

Marconi, as a young man, conducting experiments with one of his earliest types of transmitter, developed after he had made his great discovery of the earthed aerial system of transmission. In the picture the metal sheet is the aerial, while in front of the young inventor is an induction coil to generate spark discharges.

THE seed from which it can be truly said that wireless has sprung was the discovery made by Michael Faraday, one hundred years ago, that it was not necessary for two electrical circuits to be in actual physical contact in order that electric energy might pass across a small space between them. This great discovery was followed by the masterly Electro-magnetic Theory of Clerk Maxwell, published in 1865, in which he clearly visualised the existence of electric waves in space, of which experimental proof was given by Heinrich Hertz in 1888.

In 1895, I began my own researches with the express intention of utilising electric waves for telegraphing across considerable distances, and succeeded at that early date in transmitting and receiving intelligible telegraphic signals across space over distances of about one and three-quarter miles. These first tests were soon followed by important improvements which made possible tuning and selectivity and by new discoveries, such as that of the enormous distance over which these waves can travel and be detected notwithstanding the intervening curvature of the earth, which discovery enabled scientific investigators subsequently to learn something new in regard to the constitution and condition of our atmosphere at great heights, thus opening up vast and fertile fields of useful research which have lately allowed us to scrutinise still more effectively some of the mysteries wrapt up in the space which surrounds our earth.



One of the earliest Fleming valves.

The beginnings of telephony as we now know it, whether operated by line or radio waves, naturally date from the invention of the electro-magnetic telephone receiver and the carbon microphone. This takes us back to the days before Hertz, actually to the time of Maxwell, for it was in 1861 that Philip Reis, of Friederichsdorf, using a primitive form of electro-magnet and an imperfect electrical contact, obtained by means of instruments connected together by wires the first experimental results that deserve recording.

Antonio Meucci in 1871, and Elisha Gray in 1874, among others, took out patents for apparatus which was certainly able to transmit speech, though not very perfectly; but it was reserved for Dr. Graham Bell in 1876, to evolve the first practical form of telephone. This was later modified for commercial use employing a bar magnet, a speech coil at one end and an iron diaphragm, and was given the well-known bell shape associated with his name. Many of the present desk telephone receivers retain this shape, but a horse-shoe magnet is used instead of a bar magnet.

For the carbon microphone, which was invented two years later, we are indebted to Professor Hughes, Thomas A. Edison and the Rev. Hunnings, as their discoveries in this field were all made public in the same year, 1878. From that time the telephone began its conquest of land communications, and later speech was transmitted by submarine cable across narrow sea channels. But there for the time being development stopped.

THIS was the position in 1900, when Professor R. A. Fessenden made the first attempt to transmit speech through space by electric waves, and was able to effect some sort of communication over a distance of one mile. As is well known, the speech currents are superposed on some other form of current or high frequency wave which must be unbroken, not intermittent, and the spark transmission by induction coil and interrupter of that day, although quite satisfactory for telegraph working—I was then effecting radio communication over thirty-six miles—because of the dead intervals between the sparks, was quite unsuitable for telephony. To approach the required condition of carrier current, Fessenden endeavoured to make the wave trains of the sparks overlap by increasing the number to 10,000 per second and he obtained some small measure of success.

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