

Personal Communication by Wireless (1879-1922)

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After Heinrich Hertz demonstrated the existence of radio waves, some were enchanted by the idea that this remarkable scientific advance could be used for personal, mobile communication. But it would take decades before the technology would catch up with the idea.

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WILLIAM CROOKES AND DAVID HUGHES

Both the telegraph and the telephone transformed communications in the 1800s, and, at the close of the century, radio was poised to start a third revolution. Some of the earliest speculation about radio's future centered on the almost mystical idea of portable individual communication. In the opening remarks at the third annual dinner of the Institute of Electrical Engineers, held in London on November 13, 1891, the institute's president, William Crookes, spoke of the "bewildering possibility of telegraphy without wires, posts, cables, or any of our present costly appliances". In the February, 1892 issue of *Fortnightly Review*, Crookes' [Some Possibilities of Electricity](#) expanded on this theme, and looked forward to the day when two persons could use radio signals to privately communicate with each other. Crookes' review included one particularly arresting sentence: "...some years ago I assisted at experiments where messages were transmitted from one part of a house to another without an intervening wire by almost the identical means here described". J. J. Fahie contacted Crookes about this intriguing statement, and was told that the unidentified experimenter was David Hughes (who had been present at the Institute's annual meeting in November) and, who, beginning in 1879, apparently had transmitted and received radio signals, although he was discouraged from further research by reviewers who thought he had not done anything unusual. In 1899, Fahie convinced Hughes to write a short memoir of what he had accomplished twenty years previously, which was included in the [Researches of Prof. D. E. Hughes](#) appendix of *A History of Wireless Telegraphy*. A few months later Hughes was dead -- his [obituary](#) appeared in the January 26, 1900 issue of *The Electrician*. Two decades after that, the March 31, 1922 issue of *The Electrician* carried an announcement in [Wireless Notes \(Hughes Equipment\)](#) that the inventor's original instruments had been found in a storage area, and put on display at the Science Museum in South Kensington. A photograph of some of this equipment appeared in [World's First Wireless Outfit Found in London Tenement](#), from the August, 1922 issue of *Popular Science Monthly*. It is interesting to speculate how history might have been changed had Hughes been encouraged to continue his original research.

PRE-RADIO DEVELOPMENT

Experimentation in "wireless telephony" included technologies that predated radio, employing such things as induction instead of the electromagnetic radiation used by radio transmissions. None of these earlier approaches achieved commercial success, although some came close. An article in the March 13, 1887 *Burlington Hawk-eye*, reprinted from the *Cincinnati Commercial Gazette*, told of the [Wonderful Invention](#) of a wireless telephone system, using earth currents, that C. E. Egan believed would soon go into commercial operation on both land and sea, but there is no sign his optimism ever met with success.

In the December 31, 1901 *New York Sun*, [Here's Wireless Telephone](#) reported a test of Nathan Stubblefield's ground-current telephone where "A party of children were gathered there and at the receiver obtained messages from Santa Claus." More detailed reviews of his work included [Kentucky Farmer Invents Wireless Telephone](#) from the January 12, 1902 *Saint Louis Post-Dispatch*, and Waldos Fawcett's [Latest Advance in Wireless Telegraphy](#), in the May 24, 1902 *Scientific American*, which noted that plans for Stubblefield's system included an installation "by the Gordon Telephone Company, of Charleston, S. C., for the establishment of telephonic communication between the city of Charleston and the sea islands lying off the coast of South Carolina", although there is no evidence that this ever took place. After promoters of dubious repute formed the Wireless Telephone Company of America, and acquired the rights to Stubblefield's invention, advertisements such as [Wireless Telegraphy](#) in the June 15, 1902 *New York Herald* promised that the company's stock would "guarantee earnings equal to the Bell". Another advertisement promoting, to the unwary, stock in the [Wireless Telephone Company of America](#) appeared in the June 22, 1902 *Boston Globe*. However, the company's executives and directorate did not in fact consist of "successful business men of the highest reputation". A disillusioned Stubblefield soon cut his ties with the promoters, and began work on a new wireless telephone system, which used induction instead of conduction. He received a patent for this in 1908, but despite his hopes to "revolutionize the world", as reported in [Stubblefield Wireless Phone](#) from the May 26, 1908 *Hopkinsville South Kentuckian*, this alternate approach had no greater success at commercialization.

Along these same lines, the February 9, 1902, *Philadelphia Inquirer* reported that Daniel [Drawbaugh Discovers a New System of Wireless Telegraphy](#). However, A. Frederick Collins would be the best known of the experimenters using this approach. The September 4, 1900 *Honolulu Independent* reviewed his early work on wireless [Telephoning](#), while two later articles, both written by him, [The Collins Wireless Telephone](#) from the July 19, 1902 *Scientific American*, and [Wireless Telegraphy](#) from the March, 1905 *The Technical World*, reviewed photo-electric and induction systems developed by Collins, Alexander Graham Bell, and Ernest Ruhmer. Reviewing Collins wireless telephony system using conduction, the February 6, 1902 *Leslie's Weekly* asked [Telephoning without Wires: Is It Practicable?](#), and the answer, at least for this approach, was "no".

EARLY RADIO DEVELOPMENT AND SPECULATION

While radio communication was still at the fledgling stage, John Elfreth Watkins Jr.'s review of [What May Happen in the Next Hundred Years](#), from the December, 1900 *Ladies' Home Journal*, predicted by the end of the century "a husband in the middle of the Atlantic will be able to converse with his wife sitting in her boudoir in Chicago." A commentator in the *London Spectator*, quoted in the November 4, 1901 edition of the *Los Angeles Times*, looked ahead to what [The Wireless Age](#) might bring, predicting that "Some day men and women will carry wireless telephones as today we carry a card case or camera." Guglielmo Marconi was soon experimenting with mobile communication, as reported in [Military Automobile for Wireless Telegraphy](#) from the July 27, 1901 *Western Electrician*, and in a speech to a New York City meeting of the Automobile Club of America, reprinted in the May, 1902, *The Cosmopolitan*, suggested that in the future [Wireless Telegraphy from an Automobile](#) would be a "handy thing for automobiles in general". Charles Mulford Robinson, in the June, 1902 *The Cosmopolitan*, speculated about the effect that unchaperoned [Wireless Telegraphy](#) communication would have on romance, and, more practically, suggested the new technology would ensure up-to-the-minute shopping lists. R. C. McPherson's 1902 ode to "his dear little pearl" noted that "our hearts affection makes sure connection" [By Wireless Telephone](#). Twenty years later, romance was still on people's minds, as a song published in 1922, [Kiss Me By Wireless](#) proclaimed "There's a wireless station down in my heart... operating just for you and me".

Five years after Crookes' article, Professor William Ayrton predicted that widespread personal communication using radio would eventually be developed -- a review of his thoughts, [Synthetic Wireless Telegraphy](#) from the June 29, 1901 *Electrical Review*, foresaw that someday "the calling which went on every day from room to room of a house" would be expanded into worldwide communication "extending from pole to pole", although "On seeing the young faces of so many present he was filled with green envy that they, and not he, might very likely live to see the fulfillment of his prophecy." (Ayrton died in November, 1908) [Wireless Telegraphy](#), from the August 1, 1902 issue of *The Electrician (London)*, reported that "a number of scientists scattered all over the civilized world are eagerly seeking the solution to the problem of wireless telephony", and although so far there had been only limited success, "A future generation may conceivably accomplish as much in wireless telephony as is dreamed of to-day by visionaries." (This review also gently chided Prof. Ayrton for his earlier assertion that being unable to contact someone by wireless telephone would mean that person was dead -- perhaps it was just a case of being temporarily unavailable for less dramatic reasons).

The development of compact radio receivers, especially the crystal detector, increased public speculation about personal telephones, although some foresaw disadvantages to being in constant contact with the outside world, as an editorial comment in the December 17, 1906 *New York Times*, [A Triumph, but Still a Terror](#), asked "How will it be when we're told, not that somebody's 'on the wire,' but that somebody's 'on the air,' and we are exposed to answer calls from any part of the atmosphere?" In a section of [Recent Developments in Wireless Telegraphy](#), from the June, 1907 *Journal of the Franklin Institute*, Lee DeForest made light of the idea of wireless telephony as premature. However, following the introduction of Poulsen arc-transmitters for audio transmissions, speculation increased in the period from 1907 to 1911, as promoters claimed that important advances were at hand -- for example, in the August, 1908 *Modern Electrics*, [The Collins Wireless Telephone](#) by William Dubilier suggested that in the near future "every auto will be provided with a portable wireless telephone" in order to call for help if the car broke down. Two years later, A. Frederick Collins was again featured, this time in [Wireless Telephone Wizardry](#) from the May, 1910 *Technical World Magazine*, as author Winston R. Farwell enthusiastically reported "It is now possible to talk without the use of wires with persons in distant parts of a building or in adjacent buildings regardless of the number and thickness of walls and floors intervening. One may take a wireless telephone on an automobile, a motor boat, a yacht, an airship or a submarine, into a caisson, a tunnel or a mine and be able to converse with others at any given point or points on the surface as freely and as plainly as one can now talk over a local telephone with nearby points." Actually the article was a little too enthusiastic, for during the next year Collins and some of his associates at Continental Wireless would be arrested for stock fraud, as the company's actual accomplishments did not match its broad claims. (In its February 12, 1910 issue, *Telephony* magazine had warned its readers about Collins' dubious reputation in [Another Wireless Installation in the Stock Selling Campaign](#)). And not too be left behind in the race to sell worthless stock, United Wireless, in R. Burt's [The Wireless Telephone](#) from the November, 1908 issue of that company's *The Aerogram*, foresaw broad advances in both personal communication and broadcasting, which would actually come years after the company had disappeared into bankruptcy. For Christmas, 1910, the Hecht Brothers in Baltimore, Maryland announced a special service offered at their Hub Building store, when it "installed" [A Wireless Station in Direct Communication with Santa Claus](#) so that "little folks can send direct messages to Santa", as announced in the December 17, 1910 *Baltimore American*.

By 1911, the lack of progress had triggered widespread skepticism, and when *Modern Electrics* reviewed [Another Wireless Telephone](#) in its October, 1911 issue, it noted dubiously that inventor Harry Grindell Matthews "displays the characteristic assurance of success". (Science writer Garrett P. Serviss, in a column published in the June 17, 1912 *El Paso Herald*, prematurely heralded Matthew's claims as evidence that "wireless telephony is in sight", predicting that Professor Ayrton's conception of [The Electromagnetic Voice](#) was now on the cusp of being realized.) There were, however, continuing small advances, as [Electric Auto as Wireless Station](#) reviewed a successful radiotelegraph transmission, by W. B. Kerrick, from a car located outside Los Angeles, California, as reported in the July, 1911 *Technical World Magazine*. Also appearing in the same magazine was William T. Prosser's [Wireless Telephone for Everybody](#), from the April, 1912 issue, which reviewed William Dubilier's high-frequency spark system, while the September, 1913 issue featured Edward J. McCormack's favorable report on Victor Laughter's work, also using high-frequency spark, in [The Voice From the Air](#). Commercial success would continue to be elusive, however, some were still optimistic -- reporters employing wireless telephones to report stories, plus audio distribution of news "to a public too lazy to read" were just two of the [New Journalistic Wonders Predicted](#) by Robert Donald, President of the Institute of Journalists, at a New York address on the future of the newspaper, as reported by the *New York Times* on August 19, 1912.

After a lull of a few years, the introduction of vacuum-tube transmitters reinvigorated the development of audio radio transmissions, and in January, 1916, *The Electrical Experimenter* looked ahead humorously to the day when people would find it impossible to escape being contacted, in [The Wireless Phone Will Get You](#). (Seventy-nine years later, Peter Lauffer's *Wireless Etiquette* reviewed this same phenomenon, now a reality, in [The wireless as leash](#)) A. P. Herbert was even less happy, claiming that "wireless telephony seems to me to spell the end of civilization" in [Modern Nuisances](#), from the August 7, 1920 *Living Age*.

John J. Carty, Chief Engineer for Bell Telephone, spearheaded the successful [Washington--by Wireless Telephone--to Honolulu](#) test, as documented in the October 7, 1915 *Fort Wayne Sentinel*, then after the end of World War One became even more enthusiastic, in [Wireless Talk Over World Will Bring Universal Peace, Telephone Expert Predicts](#), from the front page of the February 2, 1920 *Washington Herald*, where he suggested that the impending adoption of "a world system of wireless telephony... will lead to the establishment of Christ's Kingdom of peace and good-will on earth". In the U.S. Navy Department's 1916 annual report, Secretary Josephus Daniels reported in [Communication by Wireless Telegraphy](#) that a May, 1916 test had successfully "brought to reality the prediction made to the Secretary some time previously that the time would come when he could sit at his desk and converse with the captain of a ship at sea". In the March, 1917 *The Electrical Experimenter*, [Wireless Phone for Hotel Plan](#) reported on investigations by Pacific Coast hotels into the possibility of installing wireless telephones for guests to communicate with ocean liners. Alfred N. Goldsmith, forecasting [Future Development of Radio Telegraphy](#) in his 1918 book, *Radio Telegraphy*, predicted "a very rapid development", with the result that "it should become ultimately possible to keep in immediate touch with the traveling individual regardless of his motion or temporary location". Beginning in early 1919, General Electric worked with the U.S. Navy to test ship-to-shore communication on a series of transatlantic voyages, which provided seaboard radiotelephone service for President Woodrow Wilson, as detailed by Harold H. Beverage's [Duplex Radiophone Receiver on U.S.S. George Washington](#) from the October, 1920 *General Electric Review*. In the 1919 U.S. War Department Annual Report, Army Signal Corps head Major General George O. Squier talked of "the day which I believe is not far distant, when we can reach the ultimate goal so that any individual anywhere on earth will be able to communicate directly by the spoken word to any other individual wherever he may be".

After World War One, the radio industry returned to civilian control. A. H. Grebe reported in [The Auto Radiophone](#) from the August, 1919 *Radio Amateur News* on his test installation of a wireless telephone in an automobile. Anticipation was also increasing in Great Britain, as [Pocket Wireless Soon, Predicts Marconi Official](#), which appeared in the August, 1919 *Electrical Experimenter*, reported that managing director Geoffrey Issacs -- very prematurely -- foresaw "the day, not far distant, when pocket wireless telephones will be in wide use". Review of this announcement in the March 30, 1919 *Syracuse Herald*, [Pocket Phone a Godsend to Friend Hubby](#), was skeptical: "Oh, it'll be a great age, the Pocket Phone age. It will indeed", while Roy Moulton warned in [The Pocket Telephone](#), from the December 3, 1919 *Charlotte News*: "When the wireless telephone in the vest pocket buzzes or rings or squawks or does whatever it does, you will have to answer." In September, 1920, a wire-service story by Floyd MacGriff, [Wireless Telegraphy Made Easy With New Radiophone](#), reported that Lee De Forest was now selling an "easily portable" radiotelephone, although in this case "portable" just meant transferable to different locations, for at a weight of 60 pounds (27 kilograms), "we are hardly likely to see people going about with radiophones hooked on them". Meanwhile, the November 7, 1920 issue of the Boston *Sunday Post* featured John T. Brady's [Talking by Wireless as You Travel by Train or Motor](#), which noted "It is now possible for a business man to talk with his office from a moving vehicle", as it reviewed a test two-way radio conversation the author had with Harold J. Power, head of the American Radio and Research Corporation, while Power was in a moving automobile.

The January 18, 1922 *New York Times* announced, somewhat prematurely, the impending introduction of [Wireless Telephones for Chicago Police](#) in the form of a one-way paging service. [Radiophoning To and From "L" Trains](#) from the March, 1922 *Science and Invention* reviewed an experimental installation on the Chicago Elevated Railroad, and predicted that "Pretty soon... it will be possible for you to call your home while in transit and suggest what kind of meat you want for dinner." In Margaret Penrose's 1922 [The Radio Girls of Roselawn \(communication extracts\)](#), two characters discussed whether they might, pretty soon, "carry receiving and sending sets in our pockets" which would allow them to "send or receive any news we wanted". Jessie is optimistic at first, declaring "It is going to be wonderful before long", and they might even be able to not only hear, but also see persons being talked to. However, later in the book she becomes more conservative, eventually dismissing the idea with "Oh! But that is a dream."

And individual communication using radio signals was, in fact, still largely "a dream" at this time. In the April 13, 1919 *Dallas Morning News*, [Wireless Telephone Is Not Yet Practical Due to Static Electricity](#) provided a technical review by a telephone engineer, who noted that, despite recent successful experiments, the prospect of a "pocket telephone for everyone" was a case where "it's much more easily said than done". In [Radiotelephony and Wire Systems](#), from the January 7, 1922 *Telephony*, Henry Shafer calmed nervous telephone company executives by reviewing the "very substantial reasons why the radiophone cannot supplant the wire telephone systems". And it wouldn't be until the 1980s that the technology needed for such things as pagers and wireless telephones would be perfected to the point that they became widely available consumer products. So, although the telephone's use for individual communication largely overshadowed its applications for distributing entertainment and news, the reverse would be true for radio, with broadcasting dominating for decades, before radio transmissions would be significantly developed for personal, mobile communication.