

The History of the Telephone

by Herbert N. Casson

PREFACE

Thirty-five short years, and presto!the newborn art of telephony is fullgrown.Three million telephones are now scattered abroad in foreign countries, and seven millions are massed here, in the land of its birth.

So entirely has the telephone outgrown the ridicule with which, as many people can well remember,it was first received, that it is now in most places taken for granted, as though it were a part of the natural phenomena of this planet. It has so marvellously extended the facilities of conversation--that "art in which a man has all mankind for copetitors"--that it is now an indispensable help to whoever would live the convenient life. The disadvantage of being deaf and dumb to all absent persons, which was universal in pre-telephonic days, has now happily been overcome; and I hope that this story of how and by whom it was done will be a welcome addition to American

libraries.

It is such a story as the telephone itself might tell, if it could speak with a voice of its own. It is not technical. It is not statistical. It is not exhaustive. It is so brief, in fact, that a second volume could readily be made by describing the careers of telephone leaders whose names I find have been omitted unintentionally from this book--such indispensable men, for instance, as William R. Driver, who has signed more telephone cheques and larger ones than any other man; Geo. S. Hibbard, Henry W. Pope, and W. D. Sargent, three veterans who know telephony in all its phases; George Y. Wallace, the last survivor of the Rocky Mountain pioneers; Jasper N. Keller, of Texas and New England; W. T. Gentry, the central figure of the Southeast, and the following presidents of telephone companies: Bernard E. Sunny, of Chicago; E. B. Field, of Denver; D. Leet Wilson, of Pittsburg; L. G. Richardson, of Indianapolis; Caspar E. Yost, of Omaha; James E. Caldwell, of Nashville; Thomas Sherwin, of Boston;

Henry T.Scott, of San Francisco; H. J. Pettengill, of Dallas; Alonzo Burt, of Milwaukee; John Kilgour, of Cincinnati; and Chas. S. Gleed, of Kansas City.

I am deeply indebted to most of these men for the information which is herewith presented;and also to such pioneers, now dead, as O. E.Madden, the first General Agent; Frank L.Pope, the noted electrical expert; C. H. Haskins,of Milwaukee; George F. Ladd, of San Francisco;and Geo. F. Durant, of St. Louis.

H. N. C.PINE HILL, N. Y., June 1, 1910.

CONTENTS

CHAPTER

- I THE BIRTH OF THE TELEPHONE
- II THE BUILDING OF THE BUSINESS
- III THE HOLDING OF THE BUSINESS
- IV THE DEVELOPMENT OF THE ART
- V THE EXPANSION OF THE BUSINESS
- VI NOTABLE USERS OF THE TELEPHONE
- VII THE TELEPHONE AND NATIONAL EFFICIENCY
- VIII THE TELEPHONE IN FOREIGN COUNTRIES
- IX THE FUTURE OF THE TELEPHONE

THE HISTORY OF THE TELEPHONE

CHAPTER I THE BIRTH OF THE TELEPHONE

In that somewhat distant year 1875, when the telegraph and the Atlantic cable were the most wonderful things in the world, a tall young professor of elocution was desperately busy in a noisy machine-shop that stood in one of the narrow streets of Boston, not far from Scollay Square. It was a very hot afternoon in June, but the young professor had forgotten the heat and the grime of the workshop. He was wholly absorbed in the making of a nondescript machine, a sort of crude harmonica with a clock-spring reed, a magnet, and a wire. It was a most absurd toy in appearance. It was unlike any other thing that had ever been made in any country. The young professor had been toiling over it for three years and it had constantly baffled him, until, on this hot afternoon in June, 1875, he heard an almost inaudible sound--a faint TWANG--come from the machine itself.

For an instant he was stunned. He had been expecting just such a sound for several months, but it came so suddenly as to give him the sensation of surprise. His eyes blazed with delight, and he sprang in a passion of eagerness to an adjoining room in which stood a young mechanic who was assisting him.

"Snap that reed again, Watson," cried the apparently irrational young professor. There was one of the odd-looking machines in each room, so it appears, and the two were connected by an electric wire. Watson had snapped the reed on one of the machines and the professor had heard from the other machine exactly the same sound. It was no more than the gentle TWANG of a clock-spring; but it was the first time in the history of the world that a complete sound had been carried along a wire, reproduced perfectly at the other end, and heard by an expert in acoustics.

That twang of the clock-spring was the first tiny cry of the newborn telephone, uttered in the clanging din of a machine-shop and happily heard by a man whose ear had been trained to recognize the strange voice of the little newcomer. There, amidst flying belts and jarring wheels, the baby telephone was born, as feeble and helpless as any other baby, and "with no language but a cry."

The professor-inventor, who had thus rescued the tiny foundling of science, was a young Scottish American. His name, now known as widely as the telephone itself, was Alexander Graham Bell. He was a teacher of acoustics and a student of electricity, possibly the only man in his generation who was able to focus a knowledge of both subjects upon the problem of the telephone. To other men that exceedingly faint sound would have been as inaudible as silence itself; but to Bell it was a thunder-clap. It was a dream come true. It was an impossible thing which had in a flash become so easy that he could scarcely believe it. Here, without the use of a battery, with no more electric

current than that made by a couple of magnets, all the waves of a sound had been carried along a wire and changed back to sound at the farther end. It was absurd. It was incredible. It was something which neither wire nor electricity had been known to do before. But it was true.

No discovery has ever been less accidental. It was the last link of a long chain of discoveries. It was the result of a persistent and deliberate search. Already, for half a year or longer, Bell had known the correct theory of the telephone; but he had not realized that the feeble undulatory current generated by a magnet was strong enough for the transmission of speech. He had been taught to undervalue the incredible efficiency of electricity.

Not only was Bell himself a teacher of the laws of speech, so highly skilled that he was an instructor in Boston University. His father, also, his two brothers, his uncle, and his grandfather had taught the laws of speech in the universities of Edinburgh, Dublin, and London. For three

generations the Bells had been professors of the science of talking. They had even helped to create that science by several inventions. The first of them, Alexander Bell, had invented a system for the correction of stammering and similar defects of speech. The second, Alexander Melville Bell, was the dean of British elocutionists, a man of creative brain and a most impressive facility of rhetoric. He was the author of a dozen text-books on the art of speaking correctly, and also of a most ingenious sign-language which he called "Visible Speech." Every letter in the alphabet of this language represented a certain action of the lips and tongue; so that a new method was provided for those who wished to learn foreign languages or to speak their own language more correctly. And the third of these speech-improving Bells, the inventor of the telephone, inherited the peculiar genius of his fathers, both inventive and rhetorical, to such a degree that as a boy he had constructed an artificial skull, from gutta-percha and India rubber, which, when enlivened by a blast of air from a hand-bellows, would actually pronounce several words

in an almost human manner.

The third Bell, the only one of this remarkable family who concerns us at this time, was a young man, barely twenty-eight, at the time when his ear caught the first cry of the telephone. But he was already a man of some note on his own account. He had been educated in Edinburgh, the city of his birth, and in London; and had in one way and another picked up a smattering of anatomy, music, electricity, and telegraphy. Until he was sixteen years of age, he had read nothing but novels and poetry and romantic tales of Scottish heroes. Then he left home to become a teacher of elocution in various British schools, and by the time he was of age he had made several slight discoveries as to the nature of vowel-sounds. Shortly afterwards, he met in London two distinguished men, Alexander J. Ellis and Sir Charles Wheatstone, who did far more than they ever knew to forward Bell in the direction of the telephone.

Ellis was the president of the London Philological Society. Also, he was the translator of the famous book on "The Sensations of Tone," written by Helmholtz, who, in the period from 1871 to 1894 made Berlin the world-centre for the study of the physical sciences. So it happened that when Bell ran to Ellis as a young enthusiast and told his experiments, Ellis informed him that Helmholtz had done the same things several years before and done them more completely. He brought Bell to his house and showed him what Helmholtz had done--how he had kept tuning-forks in vibration by the power of electro-magnets, and blended the tones of several tuning-forks together to produce the complex quality of the human voice.

Now, Helmholtz had not been trying to invent a telephone, nor any sort of message-carrier. His aim was to point out the physical basis of music, and nothing more. But this fact that an electro-magnet would set a tuning-fork humming was new to Bell and very attractive. It appealed at once to him as a student of speech. If a tuning-fork

could be made to sing by a magnet or an electrified wire, why would it not be possible to make a musical telegraph—a telegraph with a piano key-board, so that many messages could be sent at once over a single wire? Unknown to Bell, there were several dozen inventors then at work upon this problem, which proved in the end to be very elusive. But it gave him at least a starting-point, and he forthwith commenced his quest of the telephone.

As he was then in England, his first step was naturally to visit Sir Charles Wheatstone, the best known English expert on telegraphy. Sir Charles had earned his title by many inventions. He was a simple-natured scientist, and treated Bell with the utmost kindness. He showed him an ingenious talking-machine that had been made by Baron de Kempelin. At this time Bell was twenty-two and unknown; Wheatstone was sixty-seven and famous. And the personality of the veteran scientist made so vivid a picture upon the mind of the impressionable young Bell that the grand passion of science became henceforth the

master-motif of his life.

From this summit of glorious ambition he was thrown, several months later, into the depths of grief and despondency. The White Plague had come to the home in Edinburgh and taken away his two brothers. More, it had put its mark upon the young inventor himself. Nothing but a change of climate, said his doctor, would put him out of danger. And so, to save his life, he and his father and mother set sail from Glasgow and came to the small Canadian town of Brantford, where for a year he fought down his tendency to consumption, and satisfied his nervous energy by teaching "Visible Speech" to a tribe of Mohawk Indians.

By this time it had become evident, both to his parents and to his friends, that young Graham was destined to become some sort of a creative genius. He was tall and supple, with a pale complexion, large nose, full lips, jet-black eyes, and jet-black hair, brushed high and usually rumped

into a curly tangle. In temperament he was a true scientific Bohemian, with the ideals of a savant and the disposition of an artist. He was wholly a man of enthusiasms, more devoted to ideas than to people; and less likely to master his own thoughts than to be mastered by them. He had no shrewdness, in any commercial sense, and very little knowledge of the small practical details of ordinary living. He was always intense, always absorbed. When he applied his mind to a problem, it became at once an enthralling arena, in which there went whirling a chariotrace of ideas and inventive fancies.

He had been fascinated from boyhood by his father's system of "Visible Speech." He knew it so well that he once astonished a professor of Oriental languages by repeating correctly a sentence of Sanscrit that had been written in "Visible Speech" characters. While he was living in London his most absorbing enthusiasm was the instruction of a class of deaf-mutes, who could be trained to talk, he believed, by means of the "Visible Speech"

alphabet. He was so deeply impressed by the progress made by these pupils, and by the pathos of their dumbness, that when he arrived in Canada he was in doubt as to which of these two tasks was the more important--the teaching of deaf-mutes or the invention of a musical telegraph.

At this point, and before Bell had begun to experiment with his telegraph, the scene of the story shifts from Canada to Massachusetts. It appears that his father, while lecturing in Boston, had mentioned Graham's exploits with a class of deaf-mutes; and soon afterward the Boston Board of Education wrote to Graham, offering him five hundred dollars if he would come to Boston and introduce his system of teaching in a school for deaf-mutes that had been opened recently. The young man joyfully agreed, and on the first of April, 1871, crossed the line and became for the remainder of his life an American.

For the next two years his telegraphic work was laid aside,