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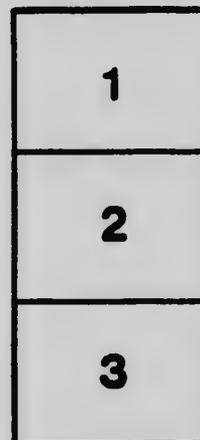
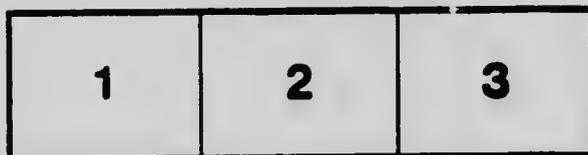
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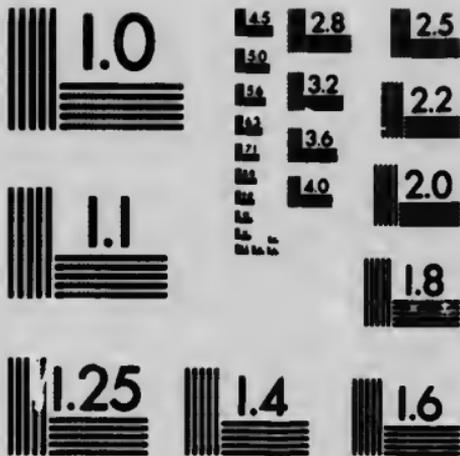
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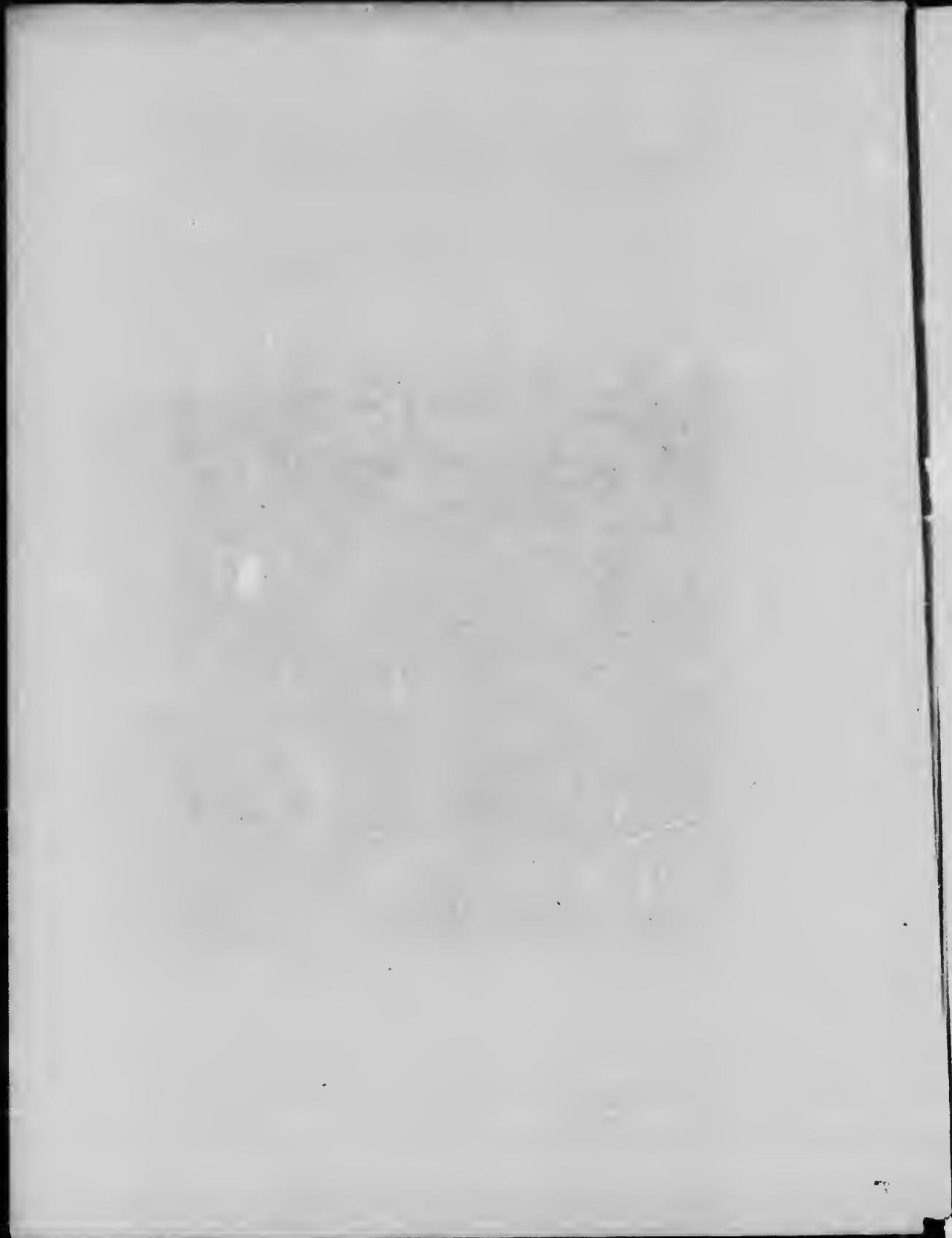
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Bell Telephone Memorial

Souvenir
of Unveiling of
**BELL TELEPHONE
MEMORIAL**
at the
**TELEPHONE CITY
BRANTFORD
OCT. 24TH. 1917**

Bell Telephone Memorial Association



**SOUVENIR OF
UNVEILING OF
BELL TELEPHONE
MEMORIAL**



At the
**TELEPHONE
CITY
BRANTFORD
OCT. 24TH 1917**

Bell Telephone Memorial

The Story of the Telephone



WHEN in 1876 a goodly handful of residents of Brantford, heard the voices of a trio of singers over a telephone line which had its terminus in the Tutela Heights home of Alexander Melville Bell, father of Alexander Graham Bell, the inventor of the telephone, it was accounted, and rightly so, as one of the wonders of the age. Yet when messages are exchanged between New York and San Francisco, when Boston hears Los Angeles celebrating, or the sound of the surf at Seal Rocks, it is dismissed as one of the day's normal happenings. Little more than a current of conversation in scientific circles is started when the announcement is made, as it was but a few short months ago, that by wireless telephone, messages had been conveyed a third of the way around the world.

The telephone is to-day of the common-place. It is accepted as one of the necessary adjuncts of the business, professional, industrial or social life of the day. That one can reach over on his desk, and within a few moments be in conversation with a man a dozen, a hundred or a thousand miles away, excites no wonder in the average mind. When a call is put in, it is taken for granted that the party on the other end, no matter what the distance, will be reached.

The wires of the daily press, laden with war news, carry repeated reference to the fact that certain operations of the fighting forces on the western and other fronts, have been carried through to success. Little thought is given to the wonders which lie behind this news. The telephone operator, hidden by camouflage in a dugout or shell hole, a stone's throw from the enemy

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lines, under continual shell fire, could tell a graphic story. The wire men who maintain the telephone communication between the men on the firing line or the observers in the artillery "spotting posts" and the headquarters in the rear, know what the telephone stands for. The infantry, waiting for the artillery barrage to lift so that they can go "over the top," perhaps realize the method by which the order to lift the rain of shells was sent. The gunners, miles in the rear, out of sight of the enemy, wonder maybe when a telephone message comes in from the observers in balloons trailing high over the enemy lines, reporting that the last shot was short. But it is all in the day's work.

One needs but to put on one's thinking cap, however, to realize what a handicap would be placed on the world's busy life were the telephone systems to go out of order without a minute's notice. In an emergency it is the telephone that is invariably used. In the great disaster at Fall River, the night operators sent out the alarm that saved hundreds, when their homes were burning through a holocaust. Repeatedly they have stayed at their posts in flood, fire or assaults. The telephone girls of Belgium were not the least of the heroes of the war.

Joy and sorrow, business and pleasure,—the telephone wires carry it all. Yet prior to the year 1876, when in Brantford the first telephone message was sent over a real telegraph line, all messages had to be carried by hand. There was no such thing heard of as talking through a wire to persons located in different places, whether near or far away. The telegraph had been invented by Morse in 1835, and thus messages could at that time be transmitted by wire through electric energy. These messages, however, had none of the personal touch. The possibility that these same wires could be used for conveying the actual intonation of a speaker, with all the mannerism of inflection, if ever thought of, was as but a wild dream.

That this was made an actual accomplishment, was due entirely to two men—Alexander Melville Bell and

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his son, Alexander Graham Bell. The former was a noted master of elocution, and inventor of a new theory of articulation by which all audible sounds could be reduced to signs translatable by any person instructed in the symbols. The son, also thoroughly versed in the science of speech, when but a young man became possessed with the idea of teaching deaf mutes to speak, being the first, at least in England, to attempt this. He took a few deaf mute children, and by teaching them his father's system of visible speech, soon had them saying a few simple words. The father, then a professor in the University of London, was invited to give a series of lectures at the Lowell Institute, Boston, where a professor of a school of deaf-mutes, like Alexander Graham Bell, saw that it had great advantages in the teaching of mutes. He conferred with the lecturer, who told him that he had a son who was interested in that subject, and as a result of correspondence, the younger Bell received and accepted an offer to cross the Atlantic and teach in that school.

The father had but a short time before lost two sons, and he felt that the physical condition of his remaining son was such that a change of climate was necessary to save his life. Accordingly he sailed to Canada, taking up his home on Tutela Heights, Brantford. The son, during the school session, lived in Boston, spending the summer vacation and Christmas holidays at the parental home here.

To carry out his plan of teaching deaf mutes to speak, Alexander Graham Bell secured a phonograph, a hollow cylinder, with one end covered with a membrane to which was attached a long bristle stylus. As one talked into the other end, the bristle, because of the vibration of the membrane, was made to write a waving line on a revolving cylinder of smoked glass placed before it. These lines were the outline of the sounds uttered.

At this time he was also working experimentally upon multiple telegraph, whereby, he hoped, messages could be sent along the same line simultaneously without confusion, by employing musical signals of definite pitch. These

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Dr. Alexander Graham Bell
The Inventor

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researches culminated in the invention in Brantford in 1874 of what is now known as the harp telephone, the ancestor of the speaking telephone.

It struck the young scientist while at work with the phonautograph, how similar that instrument was to the human ear, and how perfect a mechanism the human ear was. The suggestion came to him, after studying the ear's mechanism, that a phonautograph modelled after a human ear would be extremely effective for his purposes, and accordingly, on the advice of an eminent aurist, he secured a human ear. This he made into a phonautograph, taking a single fibre of hay as a stylus. The waves of sound as he talked into the ear, vibrating the delicate membrane of the tympanum, caused the bone to move and the wisp of hay to record the movements of the diaphragm upon a piece of smoked glass. The thought entered his mind, as he watched the tracings, that if the tympanum of the ear, so delicate, could move relatively so massive a structure as that of the bones of the ear, why could not a piece of iron be caused to vibrate in front of an electromagnet by means of a larger and thicker membrane.

Thus was the telephone conceived, in the Bell homestead on Tutela Heights. The significance of the movements of the membrane did not escape the young scientist, who realized that at last he had solved the problem upon which he had been working for some years. He converted the harp telephone into a membrane speaking telephone modelled after the human ear by attaching one of the reeds of the harp telephone to a stretched membrane, and thus forcing it to copy the movements of the air during the utterances of a sound which caused it to vibrate. And the telephone was an actuality.

But though the telephone was a reality, it was by no means perfect. He continued his experiments, and by the following summer, while again visiting at his home on Tutela Heights, he had so far advanced that he was able to write out the patent specifications during the month of September, 1875. These patents were largely based upon the liquid spark arrester which he had in-

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vented and made in Brantford during that summer vacation. He had found difficulty in working multiple telegraph apparatus on account of the spark that appeared



The Bell Homestead

between the contact point of the transmitter when the circuit was broken. This he overcame by bridging the gap with water, and by dipping one of the conducting wires very slightly into the water. The wire was adjustable up and down to regulate the amount of water re-

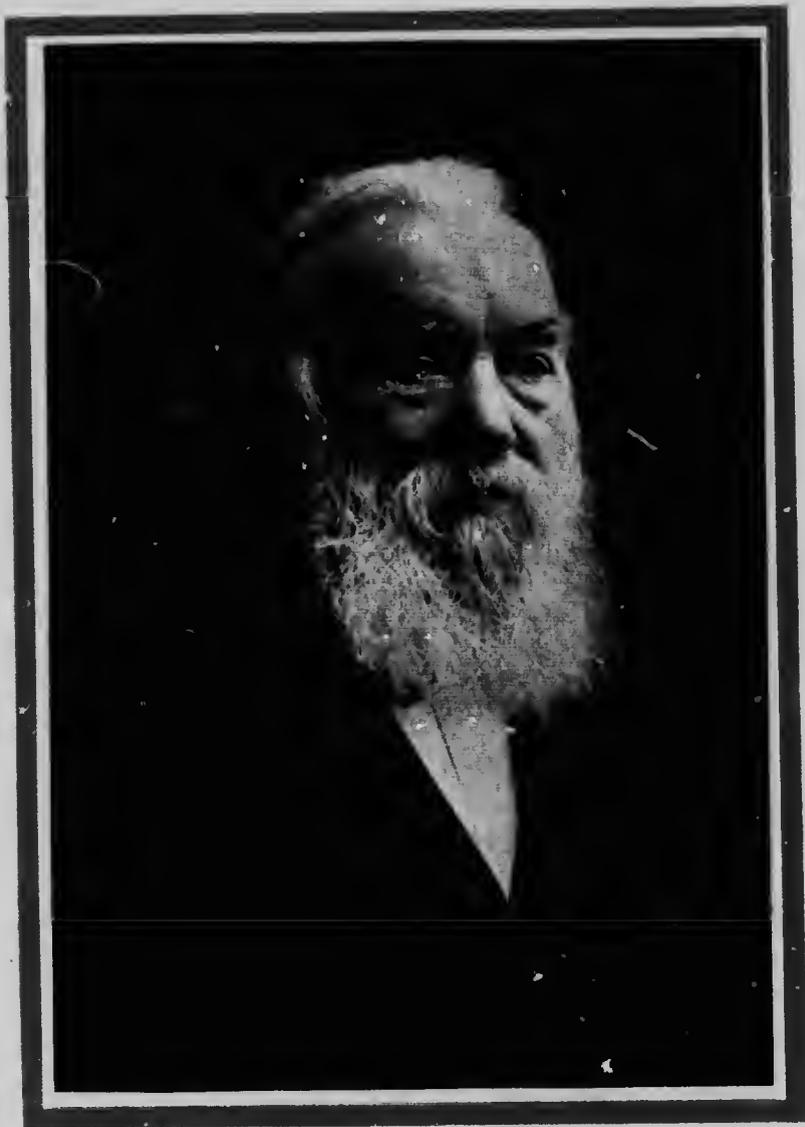
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sistance introduced when the main circuit was broken. This invention was of more than ordinary importance because in drafting his specifications, he laid stress upon the variable resistance apparatus, upon which the famous government suit was won by him in later years.

The following year the first messages were sent over a real telegraph line, all experiments hitherto having been conducted by means of wires in coils, kept in one building. In 1876 the inventor again spent his summer holidays at Tutela Heights. Through the kindness of the Dominion Telegraph Company, of Canada, the local chief being Mr. W. H. Griffin, with Ewen Cameron, still residing here, as a member of the staff, its lines were placed at his disposal for experiments. On August 10, or close to that day, 1876, experiments were made on the telegraph line between Brantford and Paris, which had two very important results. For the first time a message was transmitted by telephone over a real telegraph line, and the proper relation of the parts of a telephone to each other was discovered, enabling its use upon a long line. The receiver of the telephone was in Paris, the transmitter in Brantford, and the battery which supplied the motor power, in Toronto. The young inventor had made arrangements with his uncle, the late Prof. David C. Bell, then a resident of Brantford, to take charge of the transmitting station, as his father had stated that he would not be able to be present. Persons were to sing, talk or recite into the transmitting instrument in Brantford, while he listened at the receiver at Paris. After observing the effects for some time, he telegraphed by another line to Brantford, instructing Mr. Griffin, the manager, as to changing the arrangements of the coils. As a result of this, a combination was at last arrived at which resulted in loud and clear articulation being heard at Paris. He thought he could even recognize the voice of one of the speakers as that of his father. Surprised, because of his understanding that his father could not be on hand, he wired back to Brantford to ascertain if his father had actually spoken into the telephone. When the reply came that the voice was that of his father, who

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Alexander Melville Bell
Father of the Inventor

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had been reciting into the telephone for some time, he was delighted beyond words.

There was but one regret—that the instruments used in the test had been single ones, receiver in the one case, transmitter in the other, in place of there being a receiver and transmitter at each end. But the fact was established for the first time that the telephone was a living actuality, not merely a scientific experiment which had resulted successfully but was not practicable under other conditions—that it was a proven fact, using commercial telegraph wires in place of specially prepared coils suitable for experimental purposes alone.

The first public demonstration of the telephone was given within a few days of this event, and there are men still living in Brantford who were members of the party to which the demonstration was given, among them being A. J. Wilkes, County Crown Attorney, who has been most active in the work of securing the memorial, and S. G. Read. Before the demonstration was given, however, the inventor proceeded to Tutela Heights, to assure himself that the Mount Pleasant Telegraph line could be utilized for the experiment. He found that the distance from the nearest point on the Mount Pleasant line was about a quarter of a mile distant from his father's home. To overcome this difficulty, he undertook an experiment which was daring to a high degree. He came into the city and bought up all the stove pipe wire which was procurable. This he tacked along the fences on the way from the Bell home to the telegraph line, making connections with the latter. His originality saved the day, for the experiment was entirely successful. The transmitting instrument which was again installed in Brantford, was a triple instrument, and for the first time it was demonstrated that the voices of a number of persons could be transmitted simultaneously and clearly heard at the other end. The three persons at the Brantford end rendered a three part song, which was clearly understood at Tutela Heights.

There were a number of other experiments in the city. Ewen Cameron recalls clearly one made when the

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experimental line of stove pipe wire was connected up through the Colborne Street office of the Dominion Telegraph Company with Wycliffe Hall, afterwards the Y. M. C. A., where before a crowded hall, Prof. Bell gave an exhibition of his experiments. Later connections were made with Burford, Hamilton and other points, all being triumphantly successful.

That was in 1876. The scientific principle had been solved. It remained to apply it commercially, with improvements in the apparatus, which made it the more effective. The principle embodied in the Bell Telephone as invented in Brantford, is in use in practically all the telephones used throughout the world. And they are many. Complete statistics are not available, but in Canada alone, it is officially stated, there are 365,000 telephones in the Bell and connecting systems, the total for the Dominion, all lines included, being estimated at 580,000. The United States, with its greater population largely concentrated in the cities, leads the world in telephones, there being 10,540,000 in the Bell and connecting systems, with an estimated total of 14,200,000 for all lines. While the older countries have not adapted the telephone to their daily use to the extent that Canadians and United States citizens have, yet the total mounts into the millions. In the war zone too, every trench, every observation post, every stationary balloon, has its telephone, giving directions to the gunners where to place their shells, and instructing them as to the change of range.

**"To Commemorate the Invention of the Telephone by
Alexander Graham Bell, in Brantford in 1874."**

So runs the inscription, cut in granite, ever enduring, on the Bell Memorial, to be unveiled here on October 24, by His Excellency the Duke of Devonshire, Governor-General of Canada. Thus to the world is emblazoned the fact that in this city of Brantford, on Tutela Heights, was the telephone conceived, invented; and that from this city emanated the first telephone message to be transmitted

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Monument Erected to Commemorate the Invention of the T



A of the Telephone by Alexander Graham Bell, in Brantford in 1874

Bell Telephone Memorial

over a telegraph line to the first "long distance" call.

Though the telephone was invented here in 1874, and the first long distance messages were transmitted in 1876, also from this city, it was not until 1906 that steps were taken here to commemorate the fact. On the suggestion of W. F. Cockshutt, M.P., then President of the Board of Trade, the matter was taken up, and was rousingly endorsed at a banquet held at the Kerby House, on March 9, 1906, under the auspices of the Board of Trade, at which Dr. Alexander Graham Bell was an honored and distinguished guest. At this banquet Dr. Bell in reminiscent vein recalled his early experiments here, experiments which were crowned with success. He then remarked, in answering the toast to "The Telephone and its Inventor," that it was so long since he had been in Brantford that it seemed as a dream, yet that day, at his old home on Tutela Heights, he had met two men who had helped him to put up the first telephone line in the world. Around the very tables he could see many men who were at Tutela Heights when his uncle's voice came over the the stove pipe wire from the city of Brantford. The wire, at the time of his visit in 1906, was still strung to the fences.

It was in the same year, 1906, that the Bell Telephone Memorial Association was organized and incorporated by an Act of the Legislature of Ontario for the purpose of commemorating the invention of the telephone here and of perpetuating the name of the inventor. Organized under the patronage of His Royal Highness, the Prince of Wales, now His Majesty, King George V, and His Excellency, the Earl of Minto, then Governor-General of the Dominion, the latter's successor, the late Earl Grey and many men of eminence in Canada and the United States endorsed the proposal and gave it their support. The first Honorary President was Lord Stratheona and Mount Royal, who, on his demise, was succeeded by His Royal Highness, the Duke of Connaught, late Governor-General of Canada.

The response to the call for funds was immediate

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and generous. The Dominion and Provincial Governments made splendid contributions, as did the city and county councils, and with liberal contributions from present and former residents of the city, \$65,000 was secured.

By 1908 invitations were sent to sculptors in Europe, the United States and Canada, inviting them to submit models for a memorial. A special "Committee of Award" was appointed, the members being Sir Edmund Walker, of Toronto, Sir George C. Gibbons, of London, and Senator Davis, of New York State. Nine models were submitted to the Committee, and after much consideration, the award was made to W. S. Allward, of Toronto, under an agreement that the work should be completed by 1912. For reasons which the Committee accepted, the memorial was not completed until this year, the war, with its difficulties of transport, having much to do with the delay of recent months.

It was felt but fitting that the Bell Homestead, the family residence of Prof. Alexander Melville Bell, where were conducted the experiments which led to the invention of the telephone and its application to long distance message, should be retained for all time as a memorial of the invention and its relation to Brantford. The homestead consists of 13 acres of land, beautifully situated on Tutela Heights, overlooking the Grand River and the City of Brantford. It was purchased by Prof. Bell in 1870, when he first came to Canada to reside, and there he lived until 1881, when he removed to Washington, to be near his son, the noted inventor. The homestead was purchased by the Bell Memorial Telephone Association in 1909, and was deeded to the city, being now a portion of the parks system of the City of Brantford, under the control of the Board of Park Commissioners. It is kept open throughout the year, and its register has in it many signatures of noted men and women.

An interesting feature of the homestead is that in one of the rooms have been placed the models submitted in the competition for the Bell Memorial, which never fail to attract the attention of the visitor.

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Bell Telephone Memorial

The Monument

THE BELL MEMORIAL is one of the most impressive monuments in Canada to-day. Not a towering shaft of granite and bronze, it is so designed as to indicate by a stroke of genius, the wide spaces traversed by the telephone. On the crest of a series of steps is the main portion of the monument — a huge mass of white granite. This is faced by the largest single bronze casting ever turned out, a casting which taxed the capacity of the foundry. The sculptor sought to bring out, as the dominant note, the discovery by man of his power to transmit sound through space. Above the reclining figure of man is Inspiration, urging him on to greater endeavors, while, at the other end of the panel are the floating figures of Knowledge, Joy and Sorrow, brought to man by the telephone. A former resident of Brantford named Kinsella, invalided home from the front, acted as Mr. Allward's model, and afterwards re-enlisted. At the side of the main portion of the monument are two heroic female figures in bronze on granite, representing Humanity, the one being depicted in the act of sending, the other of receiving a message over the telephone. These two figures are some distance apart, to tell in stone the power of the telephone to traverse great distances. In this, as all observers have commented, the sculptor has achieved his object.

The Stanstead granite, of which the foundation, steps, pedestals and walls are composed, is declared to be indestructible. On the rear is a stone fountain, with bullfrog gargoyles, while cut in the stone, on pillars, are representations of the British Crown and the Maple Leaf. On the rear, also, it is probable, will be placed a bronze tablet giving the names of the patrons and of the executive committee.

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The monument is admirably located on a gore formed by West street and Albion street. The triangular plot of land in front of the monument has been parked, while the embank-



Fig. 2. Panel

ments have been sodded. In front of the gore which contains the monument is a smaller gore which has been artistically laid out as a park.

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DUKE OF DEVONSHIRE
Governor General of Canada at time of Unveiling of Monument
October 24, 1917

Bell Telephone Memorial

Biographical

ALEXANDER GRAHAM BELL



ALEXANDER GRAHAM BELL, inventor of the telephone, was born in Edinburgh, Scotland, on March 3, 1847, being the second son of Alexander Melville Bell, an authority on phonetics and defective speech. He was educated at the University of Edinburgh and the University of London, where he was appointed a professor. In 1870 he received an appointment at a school for deaf mutes in Boston, U. S., and came to Canada with his father, who purchased property on Tutela Heights, Brantford, now known as the Bell Homestead. Alexander Graham Bell landed in Canada on August 1, 1870, and after a few days spent at Paris, Ont., took up his residence with his father here. In March, 1871, he went to Boston, Mass. During 1871, and the greater part of 1872—though his home was supposed to be in Brantford—he spent a great part of his time in the United States, and in October, 1872, took up his residence in Boston, with the intention of becoming an American citizen.

In 1872 he became professor of vocal physiology in Boston University, there taking up experiments in the transmission of sound by electric energy, and other similar work, coupled with his work in tracing sound waves by means of the autophonograph. His summer vacations he spent in Brantford, and in 1874 invented the telephone here. In 1875 he carried out further experiments with the new invention, filing his patent—specifications which he had written here in September. In 1876 his telephone was used in Brantford for the first time for long distance messages over a telegraph wire.

The difficulties which faced him in the commercial application of his invention were so great that had he realized them at once he

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might have been appalled. A great plant had to be built to put the invention in practical use. Financial assistance was hard to get. Dr. Bell first went to the fathers of two of his pupils, and interested them to such an extent that finally they began to help him. He appealed to others, and the small investors responded. There was little cash on hand. The first general manager of the Bell system wrote to a man in New York who was making a small piece of machinery for him, asking when it would be ready. The man responded: "It will be ready Monday next, and the bill, which will be \$7, will be ready at the same time."

It is interesting to note that though the principle of the Bell telephone is still the same as that invented here in 1874, the telephone receiver in use to-day is the 54th type, and the transmitter the 74th type.

In recent years Dr. Bell interested himself in the problem of mechanical flight, carrying out experiments with man-lifting kites, working with these at Baddeck Bay, Nova Scotia.

Throughout his life he took keen interest in the researches in the science of speech and sound, being connected with the Smithsonian Institute at Washington, and the Volte Bureau, an aid for deaf mutes, also at Washington.

Among other inventions credited to him are the photophone, an instrument for transmitting sound by variations in a beam of light, and a phonographic apparatus.

Three generations of the Bell family became famous for their work in the line of elocution and the science of sound. Alexander Bell, Alexander Melville Bell, and the latter's two sons, Alexander Graham and Charles Edward were all noted authorities on elocution and the kindred science of vocal sounds.

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ALEXANDER MELVILLE BELL

Alexander Melville Bell, father of the inventor of the telephone, was born in Edinburgh, Scotland, in 1819, and had three distinct periods of professional life. The first 24 years he was a student, the succeeding 27 years he was a teacher, the last 35 years of his life the recognized master of his profession. As his father had been recognized as a leading instructor of elocution, and had achieved notable success in the treatment of defective speech, the son from earliest infancy entered at home an environment of student life which exceptionally fitted him for the career he followed for so long, and with such signal distinction.

The teacher period of Prof. Bell's career began in 1843 and ended in 1870. Apart from his regular engagements as instructor in the University of Edinburgh and that of London, as well as of lesser institutions, he had many private pupils, and the continuous lectures and readings in public were astounding in their number. In 1842 he announced the formulation of a new theory of articulation, his father according them general approval. After elaborating his system he taught it to his two sons, Alexander Graham and Charles Edward. Public demonstrations were given, all imaginable vocal sounds made by the professor's friends being written down by him, and the symbols read without hesitation by his sons, who were in another room while the sounds were made. The discovery that the mechanism of speech, operating on the organs of voice, acts in a uniform manner for the production of the same oral effect in different individuals, ranked Prof. A. M. Bell as foremost master of the science of speech.

He remained active with his pen, no less than 17 works relating to speech, vocal physiology, stenography, etc., being issued while he labored in England. He continued to live in Edinburgh until 1870, when, his eldest and youngest sons having died, he determined to cross the Atlantic to save the life of his remaining son, Alexander Graham Bell. This was his third trip across the Atlantic.

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He located at Tutela Heights, near this city, and for 11 years remained a resident, holding the professorship of elocution at Queen's University, Kingston, and delivering lectures at Boston, Montreal, Toronto, London and other cities, as well as appearing in numerous public readings. Soon after arriving in Canada he gave a series of 12 lectures at the Lowell Institute, Boston, and repeated this the following year. The residence in Brantford was so beneficial to his son, Alexander Graham, that he accepted a position in the faculty of Boston University School of Oratory. In 1881 Prof. A. M. Bell and Mrs. Bell removed to Washington, to reside near their son, who had taken up his permanent residence there. Here he continued in his work, delivering many lectures before the most advanced bodies in North America, while he reissued many of the books he had written in the Old Land as well as writing many others.

In 1901 he paid a visit to Brantford, his old home, where he was honored by being given the task of presenting to the Duke and Duchess of Cornwall, (now King George and Queen Mary) a silver long distance telephone as a civic gift from "The Telephone City," to mark their stay here on their tour of the Dominion.

He was twice most happily married, his first wife being Eliza Grace, daughter of Surgeon Samuel Symonds, mother of his surviving son, to whom he was wed in 1844, and his second Mrs. Harriet G. Shibley. He passed away on August 7, 1904, at his son's home at Washington, amid much regret.

Prof. Alexander Melville Bell was much honored in his lifetime. He was awarded the fellowship of the Educational Institute of Scotland, and that of the Royal Scottish Society of Arts, receiving the silver medal of the latter for his phonetic shorthand. In 1885 he was elected a fellow of the American Association for the Advancement of Science, and was a member of many of the scientific Associations of the United States.

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Brantford the "Telephone City"

DR. ALEXANDER GRAHAM BELL
TO T. H. PRESTON
March, 1916

"Brantford is justified in calling herself 'The Telephone City,' because the Telephone originated there."

DR. ALEXANDER GRAHAM BELL
TO W. F. COCKSHUTT
March 16, 1904

"Now it so happens that the Telephone was invented in Brantford, at Tutela Heights, during my visit to my father and mother in 1874."

DR. ALEXANDER GRAHAM BELL
AT BRANTFORD BOARD OF TRADE BANQUET
March 9, 1906

Referring to the first experiment over a real telegraph line, from Tutela Heights to Brantford, said:—"First I heard a cough, then a voice which said 'To be or not to be.' It was 'To be.'"

DR. ALEXANDER GRAHAM BELL
AT BOSTON, MARCH 13, 1916

"The conception of the telephone took place during that summer visit to my father's residence in Brantford in 1874, and the apparatus was just as it was subsequently made, a one-membrane telephone on either end."

"The experiment of August 10, 1876, made from Brantford to Paris, was the first transmission, the first clear, intelligible transmission of speech over the real line, that had ever been made."

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Bell Telephone Memorial Association

BRANTFORD, CANADA

Incorporated by Special Act of the Province of Ontario.

UNDER THE PATRONAGE OF H. R. H. THE PRINCE OF WALES

NOW

His Majesty The King

Honorary President

H. R. H. THE DUKE OF CONNAUGHT, K. G.

President

W. F. COCKSHUTT, M. P.

Vice President

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A. E. ROSE

Mayor of City

Warden of County

JOHN MUIR, *Treasurer*

GEO. HATELY, *Secretary*

TELEPHONE CITY OCT. 24TH 1917



